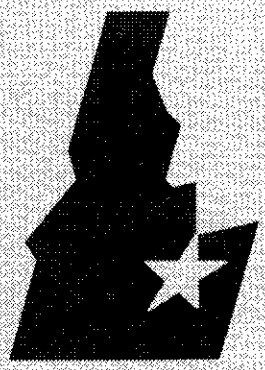

Idaho National Engineering Laboratory

Managed by the U.S. Department of Energy

June 1994

Technical Memorandum

Post Record of Decision Monitoring for the Test Reactor Area Perched Water System Operable Unit 2-12

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EG&G Idaho

Work performed under DOE Contract No. DE-AC07-76ID01570

Technical Memorandum

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Published June 1994

Idaho National Engineering Laboratory
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Idaho Falls, Idaho 83415

Prepared for the
U.S. Department of Energy
Assistant Secretary for Environmental Management
Under DOE Idaho Operations Office
Contract DE-AC07-76ID01570

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ACRONYMS

DPW	Deep Perched Water
FPDWS	Federal Primary Drinking Water Standard
INEL	Idaho National Engineering Laboratory
OU	Operable Unit
PW	perched water
ROD	Record of Decision
SRPA	Snake River Plain Aquifer
TM	Technical Memorandum
TRA	Test Reactor Area
USGS	United States Geological Survey
UTL	upper tolerance limit

1. INTRODUCTION

1.1 Purpose and Scope of Memorandum

The Record of Decision (ROD) for the Test Reactor Area (TRA) Perched Water System at the Idaho National Engineering Laboratory (INEL) Operable Unit (OU) 2-12 was issued in December 1992. The selected remedy was consistent with the proposed plan; no action with groundwater monitoring and a 3-year review of the monitoring program. The document that provides the direction for supporting the ROD, is the Post Record of Decision Monitoring Plan for the Test Reactor Area Perched Water System Operable Unit 2-12. One requirement of this plan, is that a Technical Memorandum (TM) be prepared annually to formally document the evaluation of the data collected under the auspices of the plan. This document is the first of three memorandums that will be generated to fulfill this requirement. Discussions contained in this memoranda fulfill the requirements outlined in Section 2.14 of the post-ROD monitoring plan. Data presented within the TM are associated with the first four rounds of sampling.

2. GROUNDWATER SAMPLING AND ANALYSIS

The monitoring network for the first year consisted of wells completed in the Snake River Plain and deep perched aquifers in the vicinity of the TRA. The location of these wells is shown in Figure 1. Figure 2 illustrates a generalized cross section of the shallow and deep perched water zones, and the Snake River Plain Aquifer (SRPA) beneath the TRA. The deep perched water zone occurs on top of a low permeability interbed encountered at a depth of approximately 140 to 150 feet. Water from the deep perched zone eventually recharges the SRPA, approximately 300 feet below (approximately 500 feet below land surface).

The perched water (PW), TRA, and U.S. Geological Survey (USGS) wells from which samples were collected and the aquifers in which they are completed are presented below.

- Deep Perched Aquifer

  PW-11
  PW-12
  USGS-53
  USGS-54
  USGS-55
  USGS-56.

- Snake River Plain Aquifer

  TRA-7
  USGS-58
  USGS-65.

Post-ROD sample collection for OU 2-12 began in July 1993. Subsequent samples were collected in October 1993, January 1994, and April 1994. Samples from the SRPA wells were

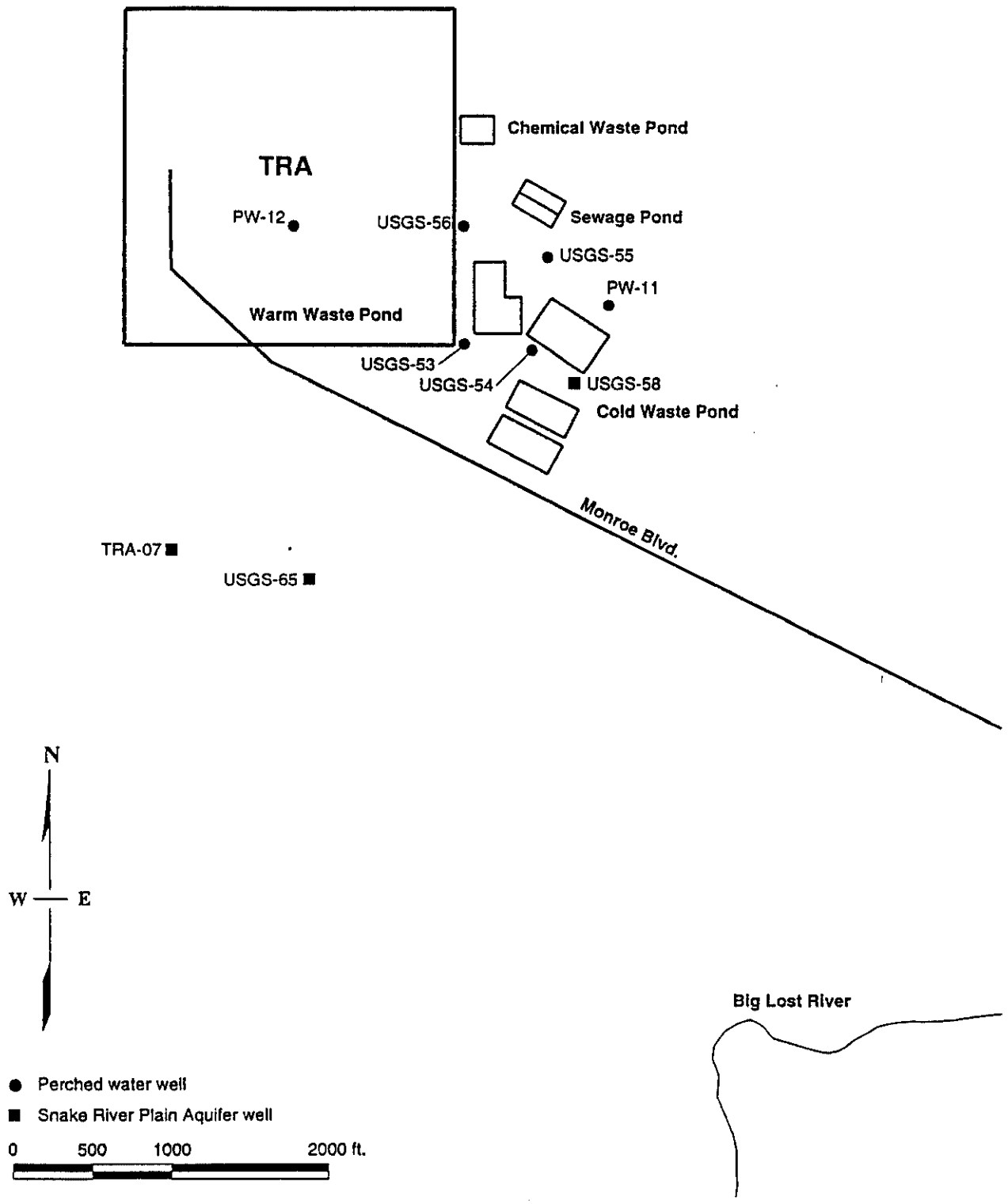


Figure 1. TRA perched water system post-ROD groundwater monitoring well network.

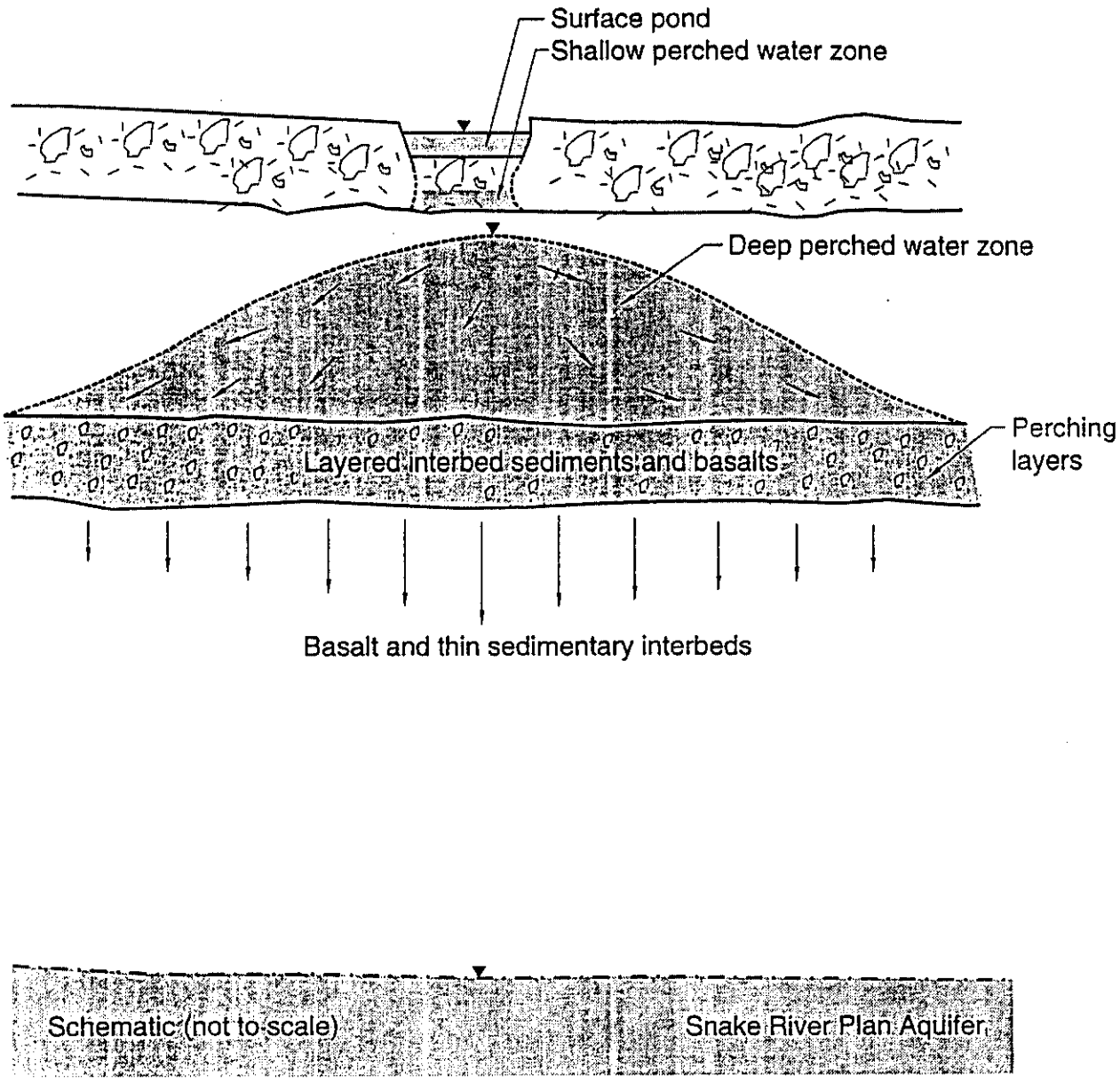


Figure 2. Generalized cross section of the perched water zones beneath TRA.

only collected in July 1993 and January 1994. Samples from the Deep Perched Aquifer wells were collected during each of the four months. Before sample collection, water level measurements were collected. Tabulated water levels are provided in Table 1. Plots of these water levels are provided in Appendix A.

Samples from each well contained in the monitoring network were analyzed for inorganic and radiological contaminants of concern in accordance with the monitoring plan. The contaminants of concern for which analyses were conducted are identified in the final remedial investigation report (Lewis et al. 1992).

The inorganic contaminants include hexavalent chromium (Cr^{+6}), fluoride, arsenic, beryllium, cadmium, chromium, cobalt, lead, and manganese. The laboratories that performed these analyses are as follows: samples collected for hexavalent chromium were submitted to the Westinghouse Idaho Nuclear Company laboratory located at the INEL; samples collected for metals and fluoride analyses were submitted to Twin City Testing located in St. Louis, MO.

The radiological contaminants include cesium-137, cobalt-60, tritium, strontium-90, and americium-241. The laboratories that performed theses analyses are as follows: samples collected for cesium-137 and cobalt-60 analyses were submitted to the Radiation Measurements Laboratory at the INEL. Samples collected for tritium, strontium-90, and americium-241 analyses were submitted to Barringer Laboratories located in Golden, CO.

A summary of the analytical results from Rounds 1–4 are provided in Appendix B.

Table 1. Tabulated water levels (feet below land surface).

Well ID	Jul-93	Oct-93	Jan-94	Apr-94
USGS-53	67.64	60.14	72.04	72.91
USGS-54	64.05	56.68	68.93	68.03
USGS-55	62.43	59.08	65.58	65.99
USGS-56	63.45	63.38	68.29	69.13
USGS-58	465.34	N/A	465.57	N/A
USGS-65	469.32	N/A	469.2	N/A
TRA-07	480.16	N/A	480.32	N/A
PW-11	109.33	107.7	106.62	107.89
PW-12	83.53	81.32	81.97	84.74

3. DEVIATIONS FROM THE MONITORING PLAN

3.1 Field Sampling Deviations

Field sampling was conducted in accordance with the monitoring plan (EGG-ER-10547, Rev. 1). There were two additions to this plan which constitute a deviation to the plan. These additions are as follows: (1) well TRA-04 was sampled in January 1994 and (2) well PW-13 was sampled during each of the four quarters.

Samples from well TRA-04 were collected to provide an upgradient data point. Samples from this well were analyzed for hexavalent chromium and Contract Laboratory Program metals.

In September 1990, diesel fuel was encountered in well PW-13. This well was sampled under the auspices of the OU 2-12 monitoring plan, since it provided a useful mechanism to continue to monitor the well and obtain data for OU 2-04. Samples were analyzed for benzene, toluene, ethylbenzene, and xylenes.

Although these wells are not considered part of the monitoring network, the analytical sample results have been included in this TM.

4. FILTERED/UNFILTERED TOTAL CHROMIUM AND HEXAVALENT CHROMIUM COMPARISONS

A comparison of the filtered/unfiltered total and hexavalent chromium results was performed. This comparison was performed on those results that were detected with no J validation flags. A comparison of the filtered total chromium versus the filtered hexavalent chromium data provides information on the proportion of hexavalent chromium relative to total chromium. The results of this analysis indicate that 95–98% of the total chromium exists as hexavalent chromium in solution (i.e., in the groundwater). Therefore, the remaining 2–5% is assumed to be trivalent chromium.

A comparison of the filtered and unfiltered total chromium results was also evaluated. This comparison indicates that there is not a significant difference between the filtered and unfiltered sample aliquots. This supports the results of the filtered total and hexavalent chromium comparison; the chromium is predominantly in solution in the hexavalent state. The sample collected from TRA-07 during Round 1 is the only exception to this conclusion. The difference in the filtered and unfiltered chromium results indicate that a more insoluble form of chromium associated with suspended solids (i.e., Cr^{+3}) also exists.

A comparison of the filtered versus unfiltered hexavalent chromium data was not performed since the laboratory filtered the hexavalent chromium sample (that was not filtered in the field) to obtain accurate results. This procedure, in conjunction with the results of these analyses, indicate that these samples are essentially duplicates of each other.

Below is a summary of the data evaluated.

	Round 1	Round 3
Total chrome (filtered/unfiltered)	201/321 ug/L[a] 194/208 ug/L[a] (duplicate) 12/9 ug/L[b] 187/173 ug/L[c]	195/204 ug/L[a] 163/159 ug/L[c] 163/160 ug/L[c] (duplicate)
Total chrome/Cr^{+6} (filtered)	12/12 ug/L[b]	195/184 ug/L[a] 163/159 ug/L[c] 163/161 ug/L[c] (duplicate)

a. TRA-07.

b. USGS-58.

c. USGS-65.

5. REGRESSION ANALYSIS

In accordance with the monitoring plan, a linear regression analysis was performed after every sampling round for those wells having five or more data points for a particular contaminant. Time versus concentration plots for a given analyte and well, along with an upper tolerance limit (UTL) were produced. The results of this analysis are provided as Appendix C. This analysis was limited to chromium and tritium, the major contaminants of concern. The data set for the other contaminants is presently too small (i.e., less than five data points). A regression analysis was performed for chromium and tritium on wells USGS-53 through -56, USGS-58, and USGS-65. The results of the regression analyses for chromium and tritium are as follows: decreasing concentration trends for chromium have been identified in wells USGS-54 and USGS-65; decreasing concentration trends for tritium have been identified in wells USGS-53, USGS-56 and USGS-65.

Historical data (i.e., collected data before the ROD) were used as the basis for the UTL, and for the linear regression analysis in accordance with the monitoring plan. The UTLs were calculated using a one-sided tolerance factor (k) such that 95% of the observed concentrations fell within the calculated limits with a 99% confidence level. A regression line was shown on those plots in which the p-value associated with the statistical test of a nonzero regression line slope was less than 0.05. If a historical data point was found to be less than the instrument detection limit (i.e., there was an associated analytical flag of "U"), then an adjustment was made to the value. In these instances, the value was set at half of the instrument detection limit.

5.1 Excursions

There were no excursions above the calculated UTLs for any of the wells sampled during the first four sampling rounds. As stated in the post-ROD monitoring plan, concentrations falling within the tolerance limits will be assumed to be usual and will require no contingency actions.

5.2 Recalculated Upper Tolerance Limits

New UTLs will be recalculated incorporating the first four rounds of analytical sampling data. Subsequent sampling rounds (Rounds 5–8) will be compared to the recalculated UTLs.

6. EVALUATION OF THE EXPECTED CONTAMINANT CONCENTRATIONS

The expected near-term changes in concentrations of the contaminants of concern in the SRPA are summarized below followed by an evaluation of the expected changes versus what was detected during the first four rounds of sampling. These expected changes (bulleted items below) are based on the fate and transport computer model predictions (Lewis et al. 1992).

- Americium-241 concentrations are expected to remain below detection

Americium-241 followed the expected near-term change. Data collected for the first year of monitoring, indicate that americium-241 remained below detection in the SRPA wells.

- Arsenic concentrations are expected to remain below detection

Arsenic followed the expected near-term change. Data collected for the first year of monitoring, indicate that arsenic remained below detection in the SRPA wells.

- Beryllium concentrations are expected to remain below detection

Beryllium followed the expected near-term change. Data collected for the first year of monitoring, indicate that beryllium remained below detection in the SRPA wells.

- Cadmium concentrations may increase and be followed by a rapid decline

Cadmium was not detected during Round 1 and was only detected in one SRPA well during Round 3. Samples from USGS-65 had cadmium concentrations detected at 2.5 ug/L. This value is below the Federal Primary Drinking Water Standard (FPDWS) listed in 40 CFR 141.11 (5 ug/L) but exceeds the background for the SRPA in the vicinity of the INEL (<1 ug/L) (From Orr et al. 1991).

- Cesium-137 concentrations are expected to remain below detection

Cesium-137 followed the expected near-term change. Data collected for the first year of monitoring, indicate that cesium-137 remained below detection in the SRPA wells.

- Chromium concentrations are expected to continue to decrease

Chromium concentrations have been variable, but did not exceed the UTL. Based on historical data, a decreasing concentration trend continues in well USGS-65. Chromium concentrations observed in USGS-65 and TRA-07 exceed the FPDWS listed in 40 CFR 141.11 (100 ug/L). All chromium concentrations observed in the SRPA wells exceed the background established for the SRPA in the vicinity of the INEL (2-3 ug/L) (From Orr et al., 1991).

Samples collected and analyzed for chromium in 1990/1991 in support of the TRA Warm Waste Pond Scoping Investigation are reported below (Doornbos et al. 1991), followed by what was observed during the post-ROD monitoring of these same wells:

TRA-07—195 and 429 ug/L (post-ROD chromium concentration range: 201–321 ug/L).

USGS-65—range: 160—187 ug/L (post-ROD chromium concentration range: 159–187 ug/L).

USGS-58—non-detectable (post-ROD chromium concentrations were observed at 9 and 12 ug/L).

- Cobalt-60 concentrations may increase and be followed by a decrease

Data collected for the first year of monitoring, indicate that cobalt-60 varied from the expected near-term change in that cobalt-60 concentrations remained below detection during the first year of monitoring in the SRPA wells.

- Fluoride concentrations are expected to remain below detection

Fluoride concentrations overall have not remained below detection limits. The results for fluoride (in ug/L) detected during Rounds 1 and 3 are as follows:

Well	Round 1	Round 3
TRA-07	170 (unfiltered) 170 (unfiltered, duplicate)	180 (unfiltered)
USGS-58	130 (unfiltered)	130 (unfiltered)
USGS-65	150 (unfiltered)	170 (unfiltered)

These concentrations are all well below the FPDWS listed in 40 CFR 141.11 (4000 ug/L), and are below the background established for the SRPA in the vicinity of the INEL (400–500 ug/L) (Orr et al. 1991).

Historically, fluoride concentrations in these wells have not been observed below detection limits. Samples collected from these wells in 1990/1991 in support of the TRA Warm Waste Pond Scoping Investigation, reported fluoride concentrations ranging from 200 to 240 ug/L (Doornbos et al. 1991). The fluoride concentrations reported for Rounds 1 and 3 are lower than those observed in 1990/1991.

- Lead concentrations are expected to remain below detection

In general, lead concentrations have not remained below detection limits. The results for lead (in ug/L) detected during Rounds 1 and 3 are as follows:

Well	Round 1	Round 3
TRA-07	2.6 (unfiltered) 2.2 (unfiltered, duplicate)	1.2 (unfiltered
USGS-58	1.5 (filtered) 5.6 (unfiltered)	—
USGS-65	4.6 (filtered) 4.6 (unfiltered)	2.9 (filtered) 3.7 (filtered, duplicate) 3.0 (unfiltered) 3.0 (unfiltered, duplicate)

These concentrations are all well below the FPDWS listed in 40 CFR 141.11 (50 ug/L), and with one exception, are below the background established for the SRPA in the vicinity of the INEL (<5 ug/L) (Orr et al. 1991).

Historically, lead concentrations in these wells have not been observed below detection limits. Samples collected from these wells in 1990/1991 in support of the TRA Warm Waste Pond Scoping Investigation, reported lead concentrations ranging from 2.8 to 10.5 ug/L (Doornbos et al. 1991). The lead concentrations reported for Rounds 1 and 3 generally occur within this range.

- Manganese concentrations are expected to remain below detection

Manganese concentrations have remained below detection in SRPA well USGS-58. The results for manganese (in ug/L) detected during Rounds 1 and 3 in wells TRA-07 and USGS-65, are as follows:

Well	Round 1	Round 3
TRA-07	4.0 (filtered) 4.0 (filtered, duplicate) 15.0 (unfiltered) 8.0 (unfiltered, duplicate)	7.0 (unfiltered)
USGS-65	—	3.0 (filtered, duplicate)

These concentrations are all well below the FPDWS listed in 40 CFR 143.3 (50 ug/L). Background concentrations for manganese from the SRPA in the vicinity of the INEL have not been established, so this comparison was not performed.

Samples collected in 1990/1991 in support of the TRA Warm Waste Pond Scoping Investigation reported manganese in well TRA-07 at 10 and 91 ug/L. Manganese was reported as non-detectable for wells USGS-58 and USGS-65 (Doornbos et al. 1991).

- Strontium-90 concentrations may increase and be followed by a decrease

In general, strontium-90 has shown a decreasing concentration trend during the first year of monitoring.

- Tritium concentrations are expected to continue to decrease.

Based on historical data for tritium, decreasing concentration trends have only been identified for SRPA well USGS-65.

The tritium concentrations reported for all of the SRPA wells during the first year of monitoring remain above the FPDWS listed in 40 CFR 141.15 and 141.16 (20 pCi/ml) and exceed the background established for the SRPA in the vicinity of the INEL (0.075-0.15 pCi/ml) (Orr et al. 1991).

7. DISCHARGE TO THE PONDS AT TRA

The perched water system in the vicinity of TRA contains water from several different sources. These sources include the retention basin, warm waste pond, chemical waste pond, cold waste pond, and well USGS-53. The two sewage lagoons also contribute to the total volume of water in the perched zone.

On August 12, 1993, discharge to the warm waste pond was discontinued, and water normally discharged to the warm waste pond was diverted to the newly constructed and lined, evaporation pond. The 52, 57, and 64 cells, which make up the warm waste pond, have been backfilled with soil and are no longer available to hold water. In 1993, approximately 13.8 million gallons of water were discharged to the warm waste pond. For purposes of comparison, 259 million gallons were discharged to the cold and chemical waste ponds in 1993. Of this total, 250 million gallons was discharged to the cold waste pond and the remainder was discharged to the chemical waste pond. These discharge volumes indicate that the warm waste pond was not a major contributor of water to the perched water system. This is further substantiated by the observed water levels in the perched water wells sampled in support of OU 2-12. These wells have not shown a notable decrease in water levels due to the removal of the warm waste pond as a contributor of water to the perched water system.

8. DISCONTINUED DISCHARGE TO THE WARM WASTE POND IN RELATION TO OBSERVED CONTAMINANT CONCENTRATIONS IN THE DEEP PERCHED WATER SYSTEM

As stated in Section 2.12.2 of the monitoring plan, the results obtained from post-ROD monitoring of the deep perched water (DPW) system, will be analyzed to identify the impact of contaminant of concern concentrations in the DPW system after discharge to the warm waste

pond is discontinued. The expected impact is a decline in the DPW system concentrations for all contaminants of concern due to the dilution effect from discharge to the cold waste pond.

A notable decline in the concentrations of the contaminants of concern has not yet been observed since discharge to the warm waste pond has been discontinued. For the deep PWS, four post-ROD data points are currently available for the contaminants of concern, three of which were obtained within 8 months of discharge to the pond being discontinued. An evaluation of these data points indicates that contaminant levels have remained fairly stable to date. It is assumed that the expected impact has not occurred in the short timeframe since discharge has been discontinued, but will be observed as monitoring continues.

9. SUMMARY AND RECOMMENDATIONS

The first year of post-ROD monitoring for OU 2-12 consisted of collecting samples from the deep PWS and the SRPA. Samples were collected in July and October 1993, and January and April 1994 in accordance with the OU 2-12 monitoring plan. A linear regression analysis was performed after each sampling round for those wells having 5 or more data points for a particular contaminant of concern. No excursions resulted from this analysis. As a result, implementation of a contingency action(s) was not required.

The expected near-term changes in concentrations of the contaminants of concern in the SRPA occurred with the following exceptions: decreasing chromium and tritium concentrations trends were only clearly identified for one of three SRPA wells, although no UTLs were exceeded, cobalt-60 concentrations remained below detection, fluoride, lead, and manganese concentrations did not remain below detection, strontium-90 has in general shown a decreasing concentration trend.

A notable decline in the concentrations of the contaminants of concern has not yet been observed in the deep PWS since discharge to the warm waste pond has been discontinued. To observe this decline, it is recommended that monitoring continue. However, it is recommended that biannual monitoring be considered since contaminant concentrations have remained fairly stable. This indicates that frequent monitoring (quarterly) is unnecessary, and biannual sampling may be more appropriate for achieving the monitoring objective.

10. REFERENCES

Doornbos, M. H., J. L. Mattick, D. L. McElroy, L. V. Street, C. S. Blackman, and C. A. Dicke, 1991, *Environmental Site Characterization for the Test Reactor Area* (Rev. 0), EGG-WM-9690, September.

EG&G Idaho, 1993, *Post Record of Decision Monitoring Plan for the Test Reactor Area Perched Water System Operable Unit 2-12*, EGG-ER-10547, August.

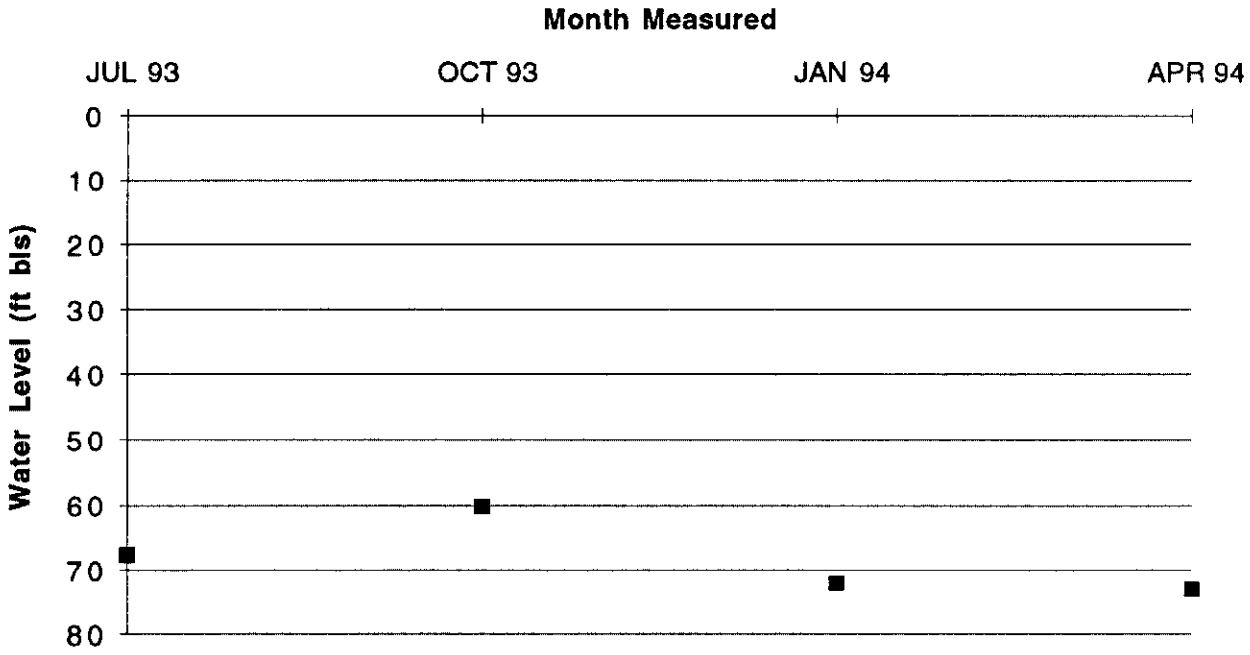
Lewis, S. M., P. O. Sinton, M. J. Condran, and J. W. Gordon, 1992, *Final Remedial Investigation Reported for the Test Reactor Area Perched Water System (Operable Unit 2-12)*, EGG-WM-10227, June.

Orr, B. R., L. D. Cecil, and L. L. Knobel, 1991, *Background Concentrations of Selected Radionuclides, Organic Compounds, and Chemical Constituents in Ground Water in the Vicinity of the Idaho National Engineering Laboratory*, USGS Water-Resources Investigations Report 91-4015.

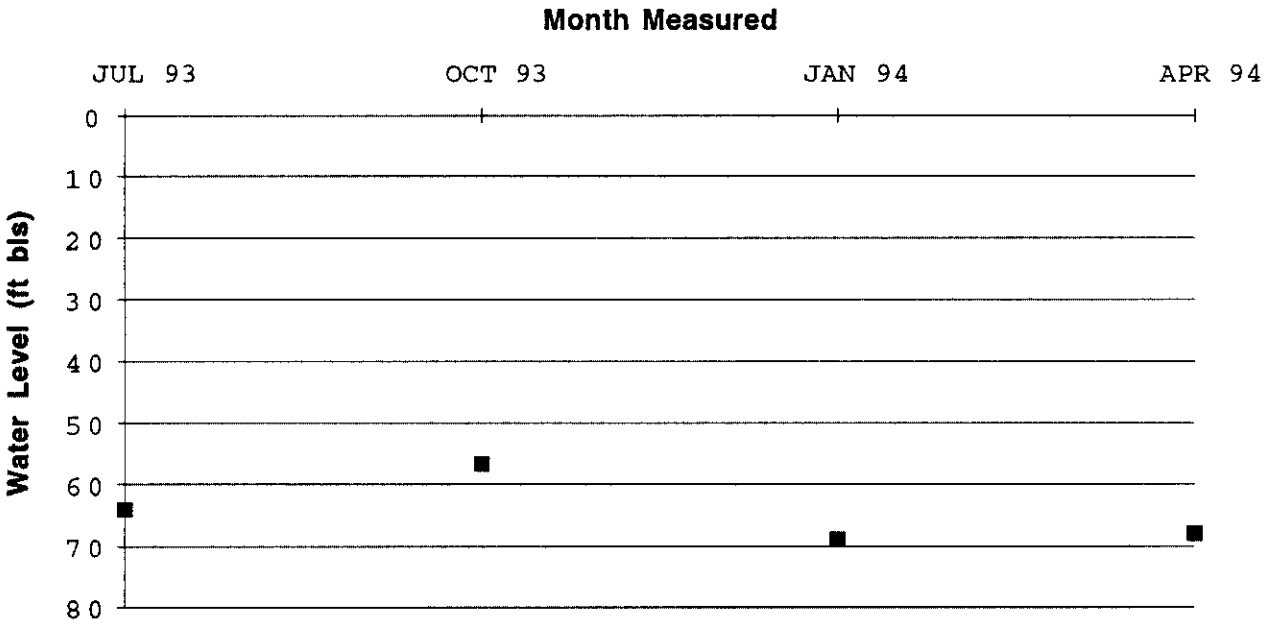
Appendix A

Water Level Plots Rounds 1–4

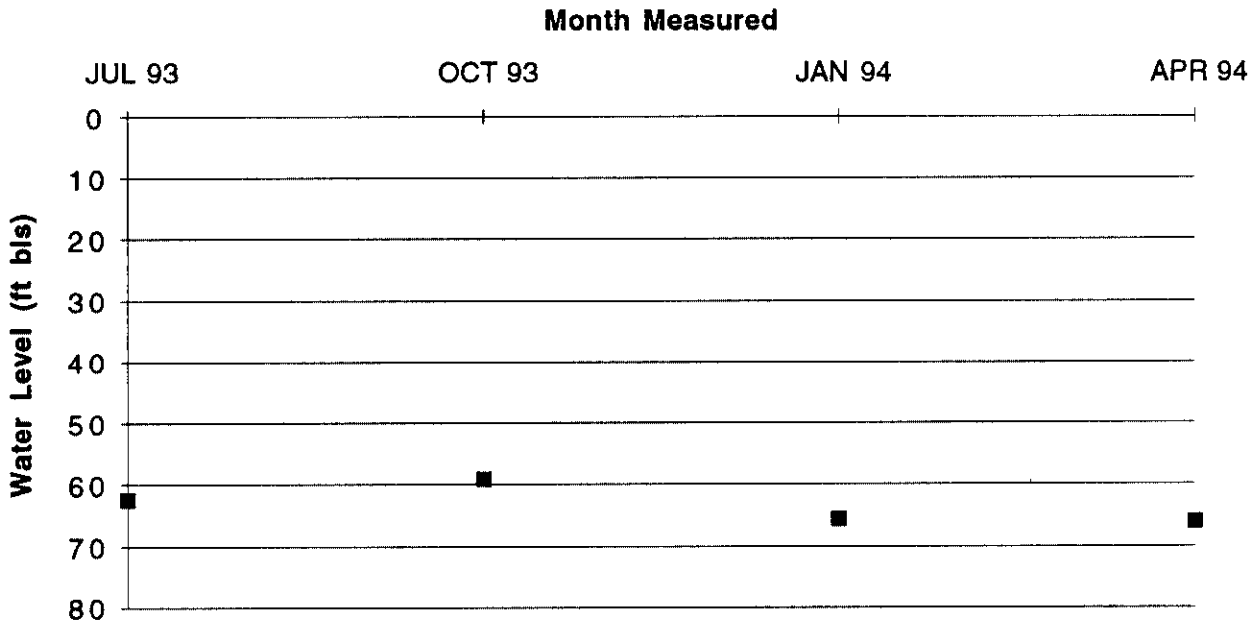
USGS-53


Month Measured
JUL 93
OCT 93
JAN 94
APR 94
Water Level (ft bls)
0
10
20
30
40
50
60
70
80

USGS-54


Month Measured
JUL 93
OCT 93
JAN 94
APR 94
Water Level (ft bls)
0
10
20
30
40
50
60
70
80

USGS-55


Month Measured
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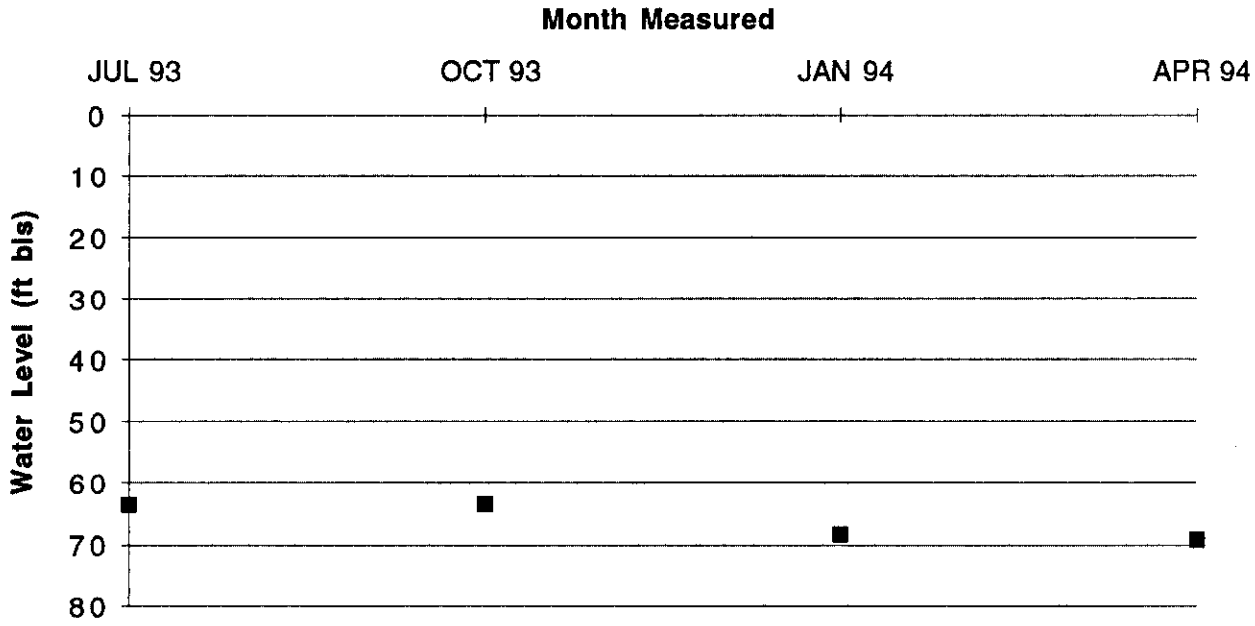
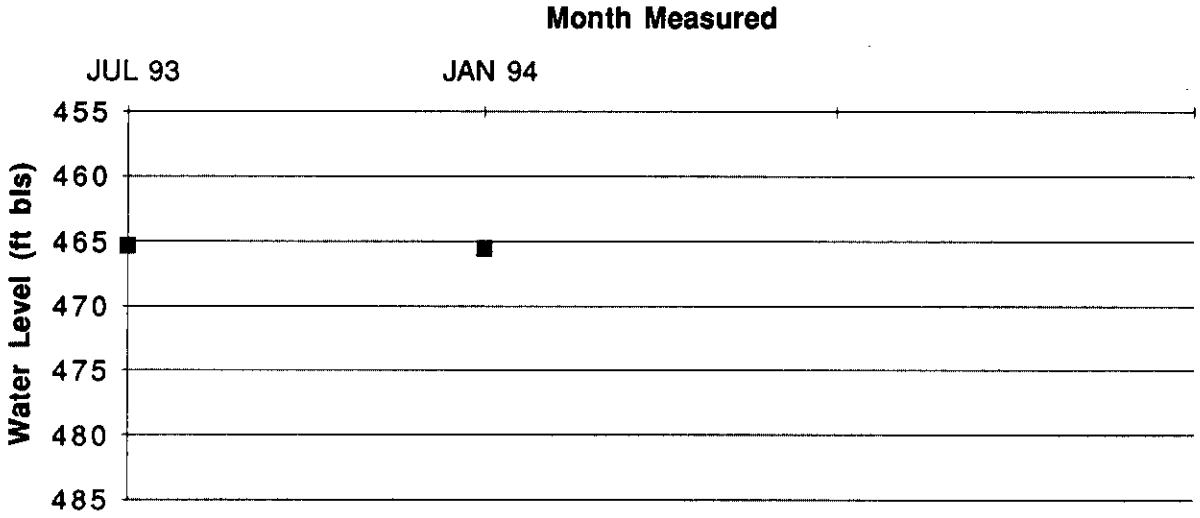
OCT 93
JAN 94
APR 94
Water Level (ft bls)
0
10
20
30
40
50
60
70
80

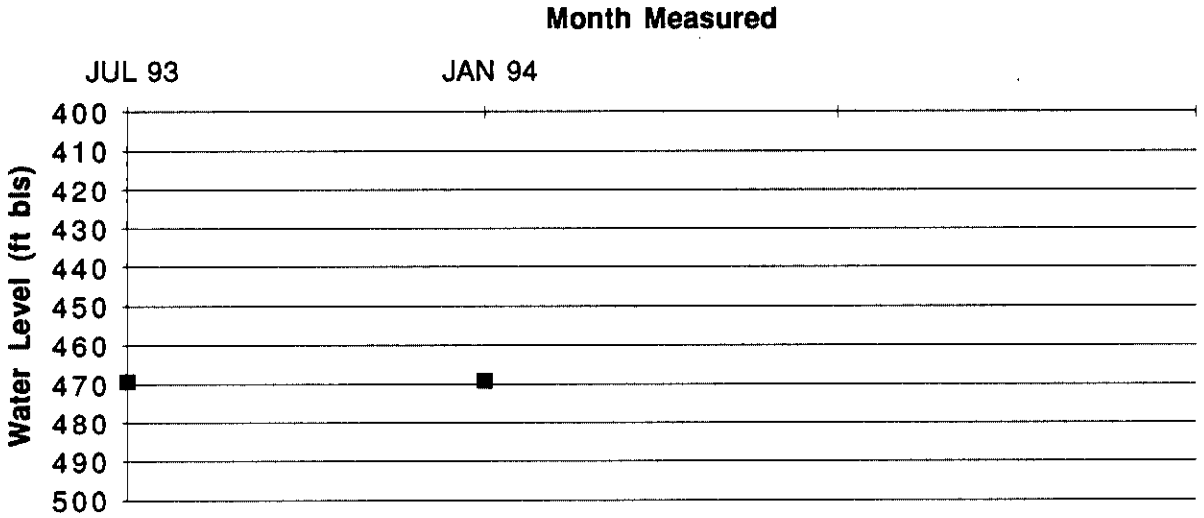
USGS-56


Month Measured
JUL 93
OCT 93
JAN 94
APR 94
Water Level (ft bls)
0
10
20
30
40
50
60
70
80

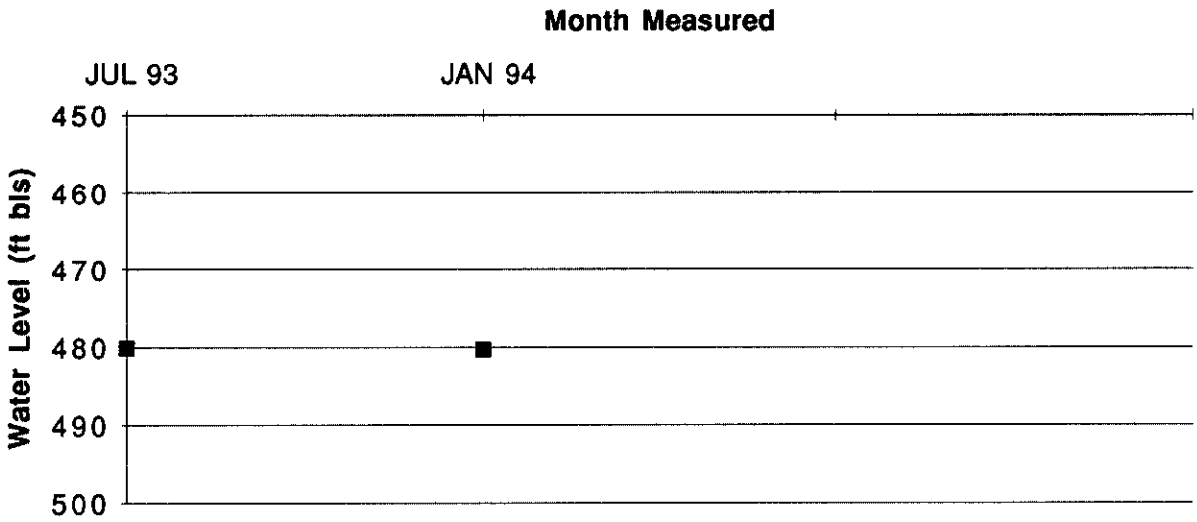
USGS-58


Month Measured
JUL 93
JAN 94
Water Level (ft bls)
455
460
465
470
475
480
485

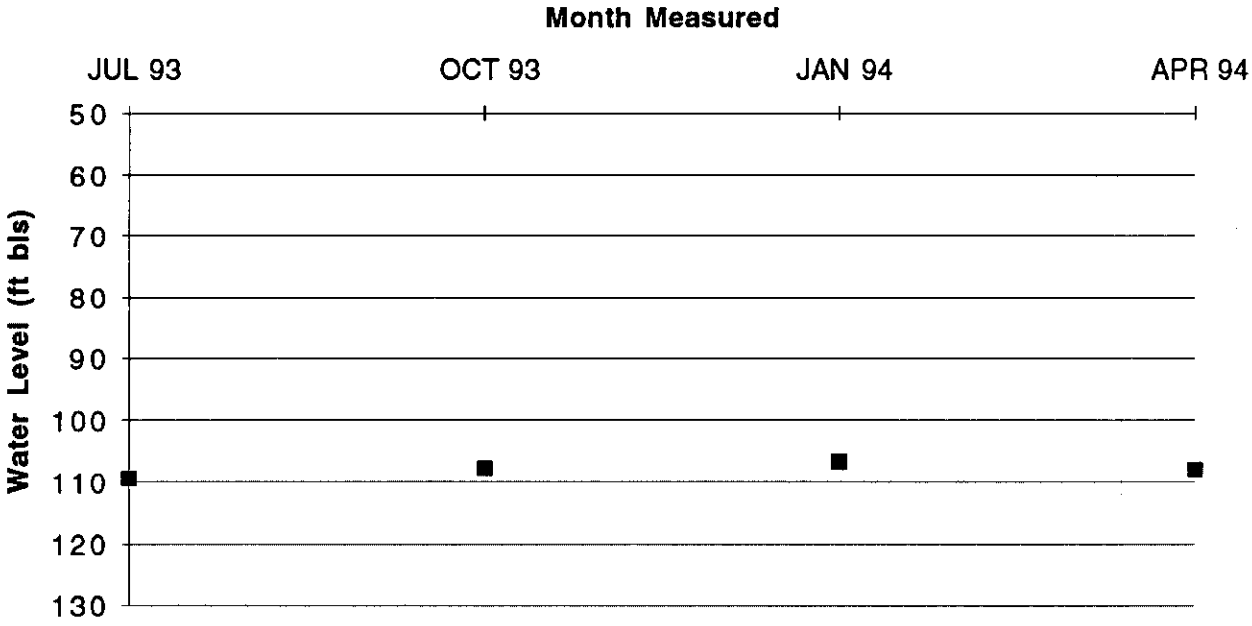
USGS-65


Month Measured
JUL 93
JAN 94
Water Level (ft bls)
400
410
420
430
440
450
460
470
480
490
500

TRA-07


Month Measured
JUL 93
JAN 94
Water Level (ft bls)
450
460
470
480
490
500

PW-11


Month Measured
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OCT 93
JAN 94
APR 94
Water Level (ft bls)
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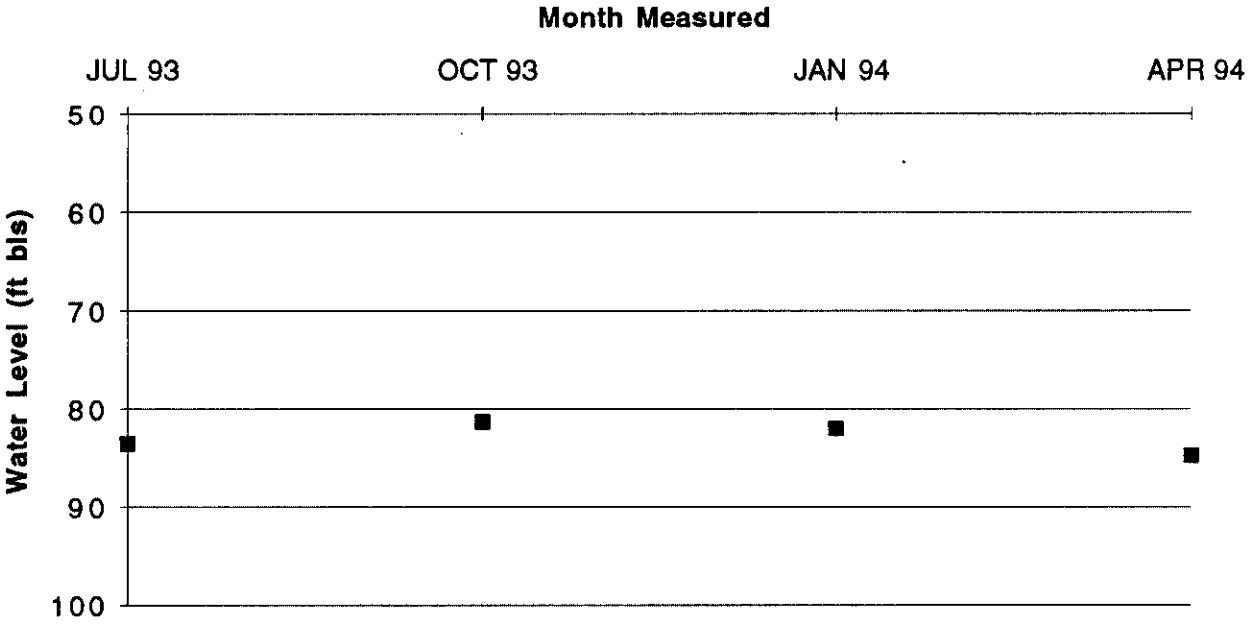
60
70
80
90
100
110
120
130

PW-12


Month Measured
JUL 93
OCT 93
JAN 94
APR 94
Water Level (ft bls)
50
60
70
80
90
100

Appendix B

Summary of Analytical Results

Table B-1. Groundwater data for PW-11 Rounds 1–4.

	ROUND 1 7-27-93	ROUND 2 10-20-93	ROUND 3 1-12-94	ROUND 4 4-5-94
Sample Collection Depth (ft)	120	120	120	125
Chromium (Hexavalent) (ug/L)	111 J	90.0	80.0	98.6
Total (Allowed) Hold Time [Method 7196]	2(1)d	1(1)d	1(1)d	1(1)d
Fluoride (ug/L)	240 J	210	240	220
Total (Allowed) Hold Time [Method 340.2]	31(28)d	12(28)d	8(28)d	17(28)d
Inorganics (ug/L)				
Arsenic	2.0 BNU	2.0 U	2.0 UW	3.0 U
Beryllium	5.0 U	4.0 U	4.0 U	2.4 BU
Cadmium	5.0 U	7.8 *UJ	2.0 U	2.0 U
Chromium	113	92.9	98.0	88.7
Cobalt	17.0 U	7.0 UN	12.0 U	11.0 U
Lead	1.0 U	1.0 UNW	1.0 UW	1.0 U
Manganese	4.0 U	5.0 B	3.0 U	3.0 U
Total (Allowed) Hold Time [Method ICP]	10(180)d	5(180)d	6(180)d	7(180)d
Total (Allowed) Hold Time [Method GFAAS]	10(180)d	5(180)d	21(180)d	7(180)d
Radionuclides (pCi/L)				
Alpha Emitters				
Americium - 241	0.00E+00 ± 1.00E-01 U	0.00E+00 ± 8.00E-02 U	1.90E-01 ± 1.40E-01 U	1.00E-01 ± 1.00E-01 U
Beta Emitters				
Strontium - 90	5.00E+00 ± 6.00E-01	1.70E+00 ± 5.00E-01	3.00E-01 ± 3.00E-01 UJ	1.80E+00 ± 4.00E-01
Tritium	1.12E+05 ± 8.00E+02	1.30E+05 ± 1.00E+03	1.26E+05 ± 1.00E+03	1.30E+05 ± 1.00E+03
Gamma Emitters	ND U			
Cobalt - 60		2.12E+01 ± 4.82E+00	2.15E+01 ± 3.75E+00	2.07E+01 ± 4.00E+00

Table B-2. Groundwater data for PW-12 Rounds 1–4.

	ROUND 1 7-28-93	ROUND 2 10-19-93	ROUND 3 1-6-94	ROUND 4 4-5-94
Sample Collection Depth (ft)	120	120	120	120
Chromium (Hexavalent) (ug/L)	10.0 U	10.0 U	10.0 U	10.0 U
Total (Allowed) Hold Time [Method 7196]	1(1)d	1(1)d	1(1)d	1(1)d
Fluoride (ug/L)	170 J	200	170	170
Total (Allowed) Hold Time [Method 340.2]	30(28)d	13(28)d	14(28)d	17(28)d
Inorganics (ug/L)				
Arsenic	2.0 UWN	2.0 U	2.0 UW	3.0 UW
Beryllium	5.0 U	4.0 U	4.0 U	1.0 U
Cadmium	5.0 U	5.0 *UJ	2.0 U	2.0 U
Chromium	6.0 U	6.0 U	5.0 U	7.0 U
Cobalt	17.0 U	7.0 UN	12.0 U	11.0 U
Lead	1.0 U	1.0 UNW	4.6	1.0 U
Manganese	4.0 U	4.9 B	3.0 U	3.0 U
Total (Allowed) Hold Time [Method ICP]	9(180)d	6(180)d	12(180)d	7(180)d
Total (Allowed) Hold Time [Method GFAAS]	9(180)d	6(180)d	27(180)d	7(180)d
Radionuclides (pCi/L)				
Alpha Emitters				
Americium - 241	1.30E+00 ± 3.00E-01	1.80E+00 ± 3.00E-01	4.60E-01 ± 1.70E-01	1.30E+00 ± 3.00E-01
Beta Emitters				
Strontium - 90	6.70E+01 ± 1.00E+00	6.00E+01 ± 1.00E+00	5.00E+01 ± 2.00E+00	5.50E+01 ± 1.00E+00 J
Tritium	2.41E+04 ± 5.00E+02	2.74E+04 ± 4.50E+02	1.70E+04 ± 4.00E+02	1.90E+04 ± 4.00E+02
Gamma Emitters				
Cobalt - 60	2.27E+02 ± 1.85E+01	3.09E+02 ± 2.40E+01	1.71E+02 ± 1.38E+01	1.84E+02 ± 1.75E+01

Table B-3. Groundwater data for PW-13 Rounds 1–4.

	ROUND 1 7-28-93	ROUND 1 DUP 7-28-93	ROUND 2 10-19-94	ROUND 2 DUP 10-19-93	ROUND 3 1-6-94
Sample Collection Depth (ft)	80	80	80	80	85
BTEX (ug/L)					
Benzene	2.0 U	2.1 U	2.1 U	2.1 U	2.1 U
Toluene	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U
Ethylbenzene	2 U	5.4	5.4	5.2	3.6
p-Xylene			2 U	2 U	2 U
m-Xylene			2.1 U	2.1 U	2.1 U
o-Xylene			2.1 U	2.1 U	2.1 U
Xylene (total)	6.2 U	6.2 U			
Total (Allowed) Hold Time	8(14)d	8(14)d	8(14)d	8(14)d	12(14)d

Table B-3. (continued).

	ROUND 3 DUP 1-6-94	ROUND 4 4-5-94	ROUND 4 DUP 4-5-94
Sample Collection Depth (ft)	85	85	85
BTEX (ug/L)			
Benzene	2.1 U	4.7 U	4.7 U
Toluene	2.2 U	4.8 U	4.8 U
Ethylbenzene	4.5	4.3 U	4.3 U
p-Xylene	2 U	4.5 U	4.5 U
m-Xylene	2.1 U	4.1 U	4.1 U
o-Xylene	2.1 U	5.1 U	5.1 U
Xylene (total)			
Total (Allowed) Hold Time	12(14)d	7(14)d	7(14)d

Table B-4. Groundwater data for TRA-04 Round 3.

	ROUND 3 1-6-94	ROUND 3 1-6-94
Sample Collection Depth (ft)	900-965	900-965
Chromium (Hexavalent) (ug/L)	10.0 U	10.0 U
Total (Allowed) Hold Time [Method 7196]	1(1)d	1(1)d
Inorganics (ug/L)		
Arsenic	2.0 UW	2.0 UW
Beryllium	4.0 U	4.0 U
Cadmium	2.0 U	2.0 U
Chromium	6.0 BU	5.0 U
Cobalt	12.0 U	12.0 U
Lead	1.0 UW	1.0 U
Manganese	3.0 U	3.0 U
Total (Allowed) Hold Time [Method ICP]	12(180)d	12(180)d
Total (Allowed) Hold Time [Method GFAAS]	27(180)d	27(180)d

Table B-5. Groundwater data for TRA-07 Rounds 1 and 3.

	ROUND 1 7-27-93 FILTERED	ROUND 1 7-27-93 UNFILTERED	ROUND 1 DUP 7-27-93 FILTERED	ROUND 1 DUP 7-27-94 UNFILTERED	ROUND 3 1-10-94 FILTERED
Sample Collection Depth (ft)	486	486	486	486	486
Chromium (Hexavalent) (ug/L)	200 J	197 J	202 J	206 J	184
Total (Allowed) Hold Time [Method 7196]	2(1)d	2(1)d	2(1)d	2(1)d	1(1)d
Fluoride (ug/L)		170 J		170 J	
Total (Allowed) Hold Time [Method 340.2]		31(28)d		31(28)d	
Inorganics (ug/L)					
Arsenic	2.0 UWN	2.0 UWN	2.0 UWN	2.0 UWN	2.0 UW
Beryllium	5.0 U	5.0 U	5.0 U	5.0 U	4.0 U
Cadmium	5.0 U	5.0 U	5.0 U	5.0 U	2.0 U
Chromium	201	321	194	208	195
Cobalt	17.0 U	17.0 U	17.0 U	17.0 U	12.0 U
Lead	1.0 U	2.6 B	1.0 U	2.2 B	1.0 UW
Manganese	4.0 B	15.0	4.0 B	8.0 B	3.0 U
Total (Allowed) Hold Time [Method ICP]	10(180)d	10(180)d	10(180)d	10(180)d	8(180)d
Total (Allowed) Hold Time [Method GFAAS]	10(180)d	10(180)d	10(180)d	10(180)d	23(180)d
Radionuclides (pCi/L)					
Alpha Emitters					
Americium - 241		0.00E+00 ± 1.00E-01 U		0.26E-01 ± 0.13E-01 U	
Beta Emitters					
Strontium - 90		4.00E-01 ± 3.00E-01 U		0.00E+00 ± 5.00E-01 U	
Tritium		3.08E+04 ± 5.00E+02		3.03E+04 ± 5.00E+02	
Gamma Emitters		ND U		ND U	

Table B-5. (continued).

	ROUND 3 1-10-94 UNFILTERED	
Sample Collection Depth (ft)	486	
Chromium (Hexavalent) (ug/L)	183	
Total (Allowed) Hold Time [Method 7196]	1(1)d	
Fluoride (ug/L)	180	
Total (Allowed) Hold Time [Method 340.2]	10(28)d	
Inorganics (ug/L)		
Arsenic	2.0	UW
Beryllium	4.0	U
Cadmium	2.0	U
Chromium	204	
Cobalt	12.0	U
Lead	1.2	BWJ
Manganese	7.0	B
Total (Allowed) Hold Time [Method ICP]	8(180)d	
Total (Allowed) Hold Time [Method GFAAS]	23(180)d	
Radionuclides (pCi/L)		
Alpha Emitters		
Americium - 241	1.30E-01 ± 1.30E-01	U
Beta Emitters		
Strontium - 90	0.00E+00 ± 3.00E-01	UJ
Tritium	3.10E+04 ± 5.00E+02	
Gamma Emitters	ND	U

Table B-6. Groundwater data for USGS-53 Rounds 1–4.

	ROUND 1 7-21-93	ROUND 2 10-19-93	ROUND 2 DUP 10-19-93	ROUND 3 1-7-94	ROUND 4 4-4-94
Sample Collection Depth (ft)	75	75	75	75	75
Chromium (Hexavalent) (ug/L)	53.0	33.1	35.7	227 J	119
Total (Allowed) Hold Time [Method 7196]	1(1)d	1(1)d	1(1)d	1(1)d	1(1)d
Fluoride (ug/L)	220 J	230	220	220	210
Total (Allowed) Hold Time [Method 340.2]	37(28)d	13(28)d	13(28)d	13(28)d	18(28)d
Inorganics (ug/L)					
Arsenic	13.9 N	8.8 B	9.8 B	8.0 BWJ	5.7 BWJ
Beryllium	5.0 U	4.0 U	4.0 U	4.0 U	1.0 U
Cadmium	5.0 U	5.0 *UJ	5.0 *UJ	2.0 U	2.0 U
Chromium	53.4	34.6	24.8	238	116
Cobalt	17.0 U	7.0 UN	7.0 UN	12.0 U	11.0 U
Lead	1.5 B	1.0 UNW	1.0 UNW	1.0 UW	1.0 U
Manganese	16.6	3.0 U	3.0 U	7.0 B	21.2
Total (Allowed) Hold Time [Method ICP]	9(180)d	6(180)d	6(180)d	11(180)d	8(180)d
Total (Allowed) Hold Time [Method GFAAS]	9(180)d	6(180)d	6(180)d	26(180)d	8(180)d
Radionuclides (pCi/L)					
Alpha Emitters					
Americium - 241	7.00E-01 ± 2.00E-01	4.00E-01 ± 2.00E-01 U	4.30E-01 ± 1.30E-01	0.00E+00 ± 9.00E-02 U	1.50E-01 ± 1.10E-01 U
Beta Emitters					
Strontium - 90	9.60E+01 ± 2.00E+00	7.20E+01 ± 1.00E+00	8.40E+01 ± 2.00E+00	1.31E+02 ± 2.00E+00	1.36E+02 ± 2.00E+00
Tritium	3.90E+05 ± 1.50E+03	4.34E+04 ± 5.50E+02	4.20E+04 ± 5.00E+02	2.46E+05 ± 1.00E+03	2.10E+05 ± 1.00E+03
Gamma Emitters		ND U	ND U		
Cobalt - 60	9.23E+01 ± 9.18E+00			4.60E+01 ± 7.17E+00	3.58E+01 ± 4.66E+00

Table B-7. Groundwater data for USGS-54 Rounds 1–4.

	ROUND 1 7-21-94	ROUND 2 10-19-93	ROUND 3 1-11-94	ROUND 4 4-5-94	ROUND 4 DUP 4-5-94
Sample Collection Depth (ft)	75	75	75	79	79
Chromium (Hexavalent) (ug/L)	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Total (Allowed) Hold Time [Method 7196]	1(1)d	1(1)d	1(1)d	1(1)d	1(1)d
Fluoride	220 J	230	190	210	190
Total (Allowed) Hold Time [Method 340.2]	37(28)d	13(28)d	9(28)d	17(28)d	17(28)d
Inorganics (ug/L)					
Arsenic	14.6 BN	11.6	9.8 BW	10.6	14.3 S
Beryllium	5.0 U	4.0 U	4.0 U	1.9 BU	1.0 U
Cadmium	5.0 U	5.0 *UJ	2.0 U	2.0 U	2.0 U
Chromium	7.1 B	6.0 U	19.0 U	7.3 B	7.0 U
Cobalt	17.0 U	7.0 UN	12.0 U	11.0 U	11.0 U
Lead	1.8 B	1.0 UNW	1.0 UW	1.0 U	1.0 U
Manganese	4.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Total (Allowed) Hold Time [Method ICP]	9(180)d	6(180)d	7(180)d	7(180)d	7(180)d
Total (Allowed) Hold Time [Method GFAAS]	9(180)d	6(180)d	22(180)d	7(180)d	7(180)d
Radionuclides (pCi/L)					
Alpha Emitters					
Americium - 241	1.00E-01 ± 1.00E-01 U	0.00E+00 ± 2.00E-02 U	4.00E-01 ± 1.70E-01	0.00E+00 ± 7.00E-02 U	2.10E-01 ± 1.30E-01 U
Beta Emitters					
Strontium - 90	1.04E+02 ± 2.00E+00	1.00E+02 ± 2.00E+00	1.01E+02 ± 2.00E+00	1.67E+02 ± 2.00E+00 J	1.14E+02 ± 2.00E+00
Tritium	6.60E+03 ± 2.50E+02	5.10E+03 ± 2.50E+02	3.20E+03 ± 2.00E+02	8.10E+03 ± 3.00E+02	2.90E+03 ± 2.00E+02
Gamma Emitters	ND U	ND U	ND U	ND U	ND U

Table B-8. Groundwater data for USGS-55 Rounds 1–4.

	ROUND 1 7-22-93	ROUND 2 10-20-93	ROUND 3 1-12-94	ROUND 4 4-4-94
Sample Collection Depth (ft)	75	75	75	80
Chromium (Hexavalent) (ug/L)	24.0	27.4	65.0	55.2
Total (Allowed) Hold Time [Method 7196]	1(1)d	1(1)d	1(1)d	1(1)d
Fluoride (ug/L)	221 J	190	210	200
Total (Allowed) Hold Time [Method 340.2]	36(28)d	12(28)d	8(28)d	18(28)d
Inorganics (ug/L)				
Arsenic	7.2 BNU	6.0 B	5.9 BWJ	4.8 B
Beryllium	5.0	4.0 U	4.0 U	1.0 U
Cadmium	5.0 U	10.4 *UJ	2.0 U	2.0 U
Chromium	23.2	24.9	72.0	53.1
Cobalt	17.0 U	7.0 UN	12.0 U	11.0 U
Lead	1.4 B	1.0 UNW	1.0 UW	1.0 U
Manganese	6.7 B	3.0 U	3.0 U	3.0 U
Total (Allowed) Hold Time [Method ICP]	8(180)d	5(180)d	6(180)d	8(180)d
Total (Allowed) Hold Time [Method GFAAS]	8(180)d	5(180)d	21(180)d	8(180)d
Radionuclides (pCi/L)				
Alpha Emitters				
Americium - 241	3.10E-01 ± 1.40E-01	6.00E-02 ± 5.00E-02 U	9.70E-01 ± 2.60E-01	2.70E-01 ± 1.40E-01 U
Beta Emitters				
Strontium - 90	9.60E+00 ± 7.00E-01	1.01E+01 ± 6.00E-01	1.17E+01 ± 6.00E-01 J	9.00E+00 ± 6.00E-01
Tritium	1.10E+04 ± 3.00E+02	4.00E+03 ± 2.00E+02	2.60E+03 ± 2.00E+02	1.80E+03 ± 2.00E+02
Gamma Emitters	ND U	ND U	ND U	ND U

Table B-9. Groundwater data for USGS-56 Rounds 1–4.

	ROUND 1 7-27-93	ROUND 2 10-20-93	ROUND 3 1-12-94	ROUND 4 4-4-94
Sample Collection Depth (ft)	75	75	75	75
Chromium (Hexavalent) (ug/L)	244 J	136	69.0	114
Total (Allowed) Hold Time [Method 7196]	2(1)d	1(1)d	1(1)d	1(1)d
Fluoride (ug/L)	120 J	160	110	140
Total (Allowed) Hold Time [Method 340.2]	31(28)d	12(28)d	8(28)d	18(28)d
Inorganics (ug/L)				
Arsenic	5.1 BNU	3.1 B	2.0 UW	3.0 UW
Beryllium	5.0 U	4.0 U	4.0 U	5.9 U
Cadmium	5.0 U	5.0 *UJ	2.0 U	2.0 U
Chromium	245	136	73.0	109
Cobalt	17.0 U	7.0 UN	12.0 U	11.0 U
Lead	4.8 W	1.0 UNW	1.0 UW	1.0 U
Manganese	4.0 U	3.0 U	3.0 U	3.0 U
Total (Allowed) Hold Time [Method ICP]	10(180)d	5(180)d	6(180)d	8(180)d
Total (Allowed) Hold Time [Method GFAAS]	10(180)d	5(180)d	21(180)d	8(180)d
Radionuclides (pCi/L)				
Alpha Emitters				
Americium - 241	1.00E-01 ± 1.00E-01 U	1.00E-01 ± 1.00E-01 U	0.00E+00 ± 7.00E-02 U	4.00E-01 ± 1.70E-01
Beta Emitters				
Strontium - 90	1.79E+02 ± 2.00E+00	6.70E+01 ± 1.00E+00	8.50E+01 ± 1.00E+00 J	6.90E+01 ± 1.00E+00
Tritium	2.37E+05 ± 1.20E+03	7.46E+05 ± 2.00E+03	8.72E+04 ± 5.00E+02	5.00E+05 ± 2.00E+03
Gamma Emitters				
Cobalt - 60	2.38E+02 ± 1.88E+01	1.01E+03 ± 7.44E+01	4.34E+01 ± 5.70E+00	1.02E+02 ± 1.05E+01

Table B-10. Groundwater data for USGS-58 Rounds 1 and 3.

	ROUND 1 7-26-93 FILTERED	ROUND 1 7-26-93 UNFILTERED	ROUND 3 1-11-94 FILTERED	ROUND 3 1-11-93 UNFILTERED
Sample Collection Depth (ft)	476	476	476	476
Chromium (Hexavalent) (ug/L)	12.0	11.0	10.0 U	10.0 U
Total (Allowed) Hold Time [Method 7196]	1(1)d	1(1)d	1(1)d	1(1)d
Fluoride (ug/L)		130 J		130
Total (Allowed) Hold Time [Method 340.2]		32(28)d		9(28)d
Inorganics (ug/L)				
Arsenic	2.6 BNU	8.1 BWNU	2.0 UW	2.0 UW
Beryllium	5.0 U	5.0 U	4.0 U	4.0 U
Cadmium	5.0 U	5.0 U	2.0 U	2.0 U
Chromium	12.0	9.0 B	16.0 U	15.0 U
Cobalt	17.0 U	17.0 U	12.0 U	12.0 U
Lead	1.5 B	5.6	1.0 UW	1.0 UW
Manganese	4.0 U	4.0 U	3.0 U	3.0 U
Total (Allowed) Hold Time [Method ICP]	11(180)d	11(180)d	7(180)d	7(180)d
Total (Allowed) Hold Time [Method GFAAS]	11(180)d	11(180)d	22(180)d	22(180)d
Radionuclides (pCi/L)				
Alpha Emitters				
Americium - 241		0.00E+00 ± 1.00E-01 U		0.00E+00 ± 9.00E-02 U
Beta Emitters				
Strontium - 90		1.90E+00 ± 5.00E-01		0.00E+00 ± 3.00E-01 UJ
Tritium		4.20E+03 ± 2.00E+02		4.60E+03 ± 2.00E+02
Gamma Emitters		ND U		ND U

Table B-11. Groundwater data for USGS-65 Rounds 1 and 3.

	ROUND 1 7-26-93 FILTERED	ROUND 1 7-26-93 UNFILTERED	ROUND 3 1-10-94 FILTERED	ROUND 3 1-10-94 UNFILTERED	ROUND 3 DUP 1-10-94 FILTERED
Sample Collection Depth (ft)	490	490	490	490	490
Chromium (Hexavalent) (ug/L)	192 J	193 J	159	160	161
Total (Allowed) Hold Time [Method 7196]	2(1)d	2(1)d	1(1)d	1(1)d	1(1)d
Fluoride (ug/L)		150 J		170	
Total (Allowed) Hold Time [Method 340.2]		32(180)d		10(28)d	
Inorganics (ug/L)					
Arsenic	4.5 BWNU	2.0 UWN	2.0 UW	2.0 UW	2.0 UW
Beryllium	5.0 U	5.0 U	4.0 U	4.0 U	4.0 U
Cadmium	5.0 U	5.0 U	2.5 B	2.0 U	2.0 U
Chromium	187	173	163	159	163
Cobalt	17.0 U	17.0 U	12.0 U	12.0 U	12.0 U
Lead	4.6	4.6	2.9 B	3.0 W	3.7
Manganese	4.0 U	4.0 U	3.0 U	3.0 U	3.0 B
Total (Allowed) Hold Time [Method ICP]	11(180)d	11(180)d	8(180)d	8(180)d	8(180)d
Total (Allowed) Hold Time [Method GFAAS]	11(180)d	11(180)d	23(180)d	23(180)d	23(180)d
Radionuclides (pCi/L)					
Alpha Emitters					
Americium - 241		0.00E+00 ± 1.00E-01 U		1.30E-01 ± 1.30E-01 U	
Beta Emitters					
Strontium - 90		1.80E+00 ± 5.00E-01		0.00E+00 ± 3.00E-01 UJ	
Tritium		2.82E+04 ± 4.00E+02		2.74E+04 ± 4.00E+02	
Gamma Emitters		ND U		ND U	

Table B-11. (continued).

	ROUND 3 DUP 1-10-94 UNFILTERED	
Sample Collection Depth (ft)	490	
Chromium (Hexavalent) (ug/L)	161	
Total (Allowed) Hold Time [Method 7196]	1(1)d	
Fluoride (ug/L)	150	
Total (Allowed) Hold Time [Method 340.2]	10(28)d	
Inorganics (ug/L)		
Arsenic	2.0	UW
Beryllium	4.0	U
Cadmium	2.0	U
Chromium	160	
Cobalt	12.0	U
Lead	3.0	WJ
Manganese	3.0	U
Total (Allowed) Hold Time [Method ICP]	8(180)d	
Total (Allowed) Hold Time [Method GFAAS]	23(180)d	
Radionuclides (pCi/L)		
Alpha Emitters		
Americium - 241	3.20E-01 ± 1.70E-01	U
Beta Emitters		
Strontium - 90	0.00E+00 ± 4.00E-01	UJ
Tritium	2.66E+04 ± 4.00E+02	
Gamma Emitters	ND	U

Table B-12. Groundwater data for field blanks Rounds 1–4.

	ROUND 1 7-27-93	ROUND 2 10-20-93	ROUND 3 01-11-94	ROUND 4 4-5-94
Chromium (Hexavalent) (ug/L)	10.0 UJ	10.0 U	10.0 U	10.0 U
Total (Allowed) Hold Time [Method 7196]	2(1)d	1(1)d	1(1)d	1(1)d
Fluoride (ug/L)	50.0 UJ	110	50.0 U	50.0 U
Total (Allowed) Hold Time [Method 340.2]	31(28)d	12(28)d	9(28)d	17(28)d
Inorganics (ug/L)				
Arsenic	2.0 UN	2.0 U	2.0 UW	3.0 U
Beryllium	5.0 U	4.0 U	4.0 U	4.1 BU
Cadmium	5.0 U	8.5 *J	2.0 U	2.0 U
Chromium	6.0 U	6.0 U	5.0 BU	7.0 U
Cobalt	17.0 U	7.0 UN	12.0 U	11.0 U
Lead	1.0 U	1.0 UN	1.0 U	1.0 U
Manganese	4.0 U	3.0 U	3.0 U	3.0 U
Total (Allowed) Hold Time [Method ICP]	10(180)d	5(180)d	7(180)d	7(180)d
Total (Allowed) Hold Time [Method GFAAS]	10(180)d	5(180)d	22(180)d	7(180)d
Radionuclides (pCi/L)				
Alpha Emitters				
Americium - 241	2.00E-01 ± 1.00E-01 U	3.00E-01 ± 1.00E-01	2.00E-01 ± 1.50E-01 U	9.80E-01 ± 2.40E-01
Beta Emitters				
Strontium - 90	0.00E+00 ± 3.00E-01 U	6.00E-01 ± 4.00E-01 U	4.00E-01 ± 3.00E-01 UJ	6.00E-01 ± 4.00E-01 U
Tritium	2.90E+02 ± 1.30E+02 U	0.00E+00 ± 1.45E+02 U	2.10E+02 ± 1.10E+02 U	0.00E+00 ± 1.00E+02 U
Gamma Emitters	ND U	ND U	ND U	ND U

Table B-13. Groundwater data for rinsates Rounds 1–4.

	ROUND 1 7-22-93	ROUND 2 10-18-93	ROUND 3 1-7-94	ROUND 4 4-4-94
Chromium (Hexavalent) (ug/L)	10.0 U	10.0 U	10.0 U	10.0 U
Total (Allowed) Hold Time [Method 7196]	1(1)d	1(1)d	1(1)d	1(1)d
Fluoride (ug/L)	50.0 UJ	50.0 U	50.0 U	50.0 U
Total (Allowed) Hold Time [Method 340.2]	36(28)d	14(28)d	13(28)d	18(28)d
Inorganics (ug/L)				
Arsenic	2.0 UN	2.0 U	2.0 U	3.0 U
Beryllium	5.0 U	4.0 U	4.0 U	3.0 BU
Cadmium	5.0 U	5.0 *UJ	2.0 U	2.0 U
Chromium	6.0 U	6.0 U	5.0 U	7.0 U
Cobalt	17.0 U	7.0 UN	12.0 U	11.0 U
Lead	1.6 B	1.0 UNW	2.8 BW	11.7
Manganese	4.0 U	3.0 U	3.0 U	3.0 U
Total (Allowed) Hold Time [Method ICP]	8(180)d	7(180)d	11(180)d	8(180)d
Total (Allowed) Hold Time [Method GFAAS]	8(180)d	7(180)d	26(180)d	8(180)d
Radionuclides (pCi/L)				
Alpha Emitters				
Americium - 241	4.10E-01 ± 1.60E-01	3.00E-01 ± 1.00E-01	2.90E-01 ± 1.80E-01 U	3.30E-01 ± 1.50E-01
Beta Emitters				
Strontium - 90	2.90E+00 ± 7.00E-01	7.00E-01 ± 4.00E-01 U	0.00E+00 ± 3.00E-01 UJ	1.00E-01 ± 5.00E-01 U
Tritium	3.00E+01 ± 1.45E+02 U	2.30E+02 ± 1.50E+02 U	5.00E+01 ± 1.00E+02 U	3.20E+02 ± 1.10E+02
Gamma Emitters	ND U	ND U	ND U	ND U

Table B-14. Groundwater data for trip blanks Rounds 1–4.

	ROUND 1 7-28-93	ROUND 2 10-19-93	ROUND 3 1-6-94	ROUND 4 4-5-94
BTEX (ug/L)				
Benzene	2.1 U	2.1 U	2.1 U	4.7 U
Toluene	2.2 U	2.2 U	2.2 U	4.8 U
Ethylbenzene	2 U	2.2 U	2 U	4.3 U
p-Xylene		2 U	2 U	4.5 U
m-Xylene		2.1 U	2.1 U	4.1 U
o-Xylene		2.1 U	2.1 U	5.1 U
Xylene (total)	6.2 U			
Total (Allowed) Hold Time	8(14)d	8(14)d	7(14)d	7(14)d

Appendix C

Regression Analysis Data and Results

Post-ROD Data

ANALYTE=Chromium

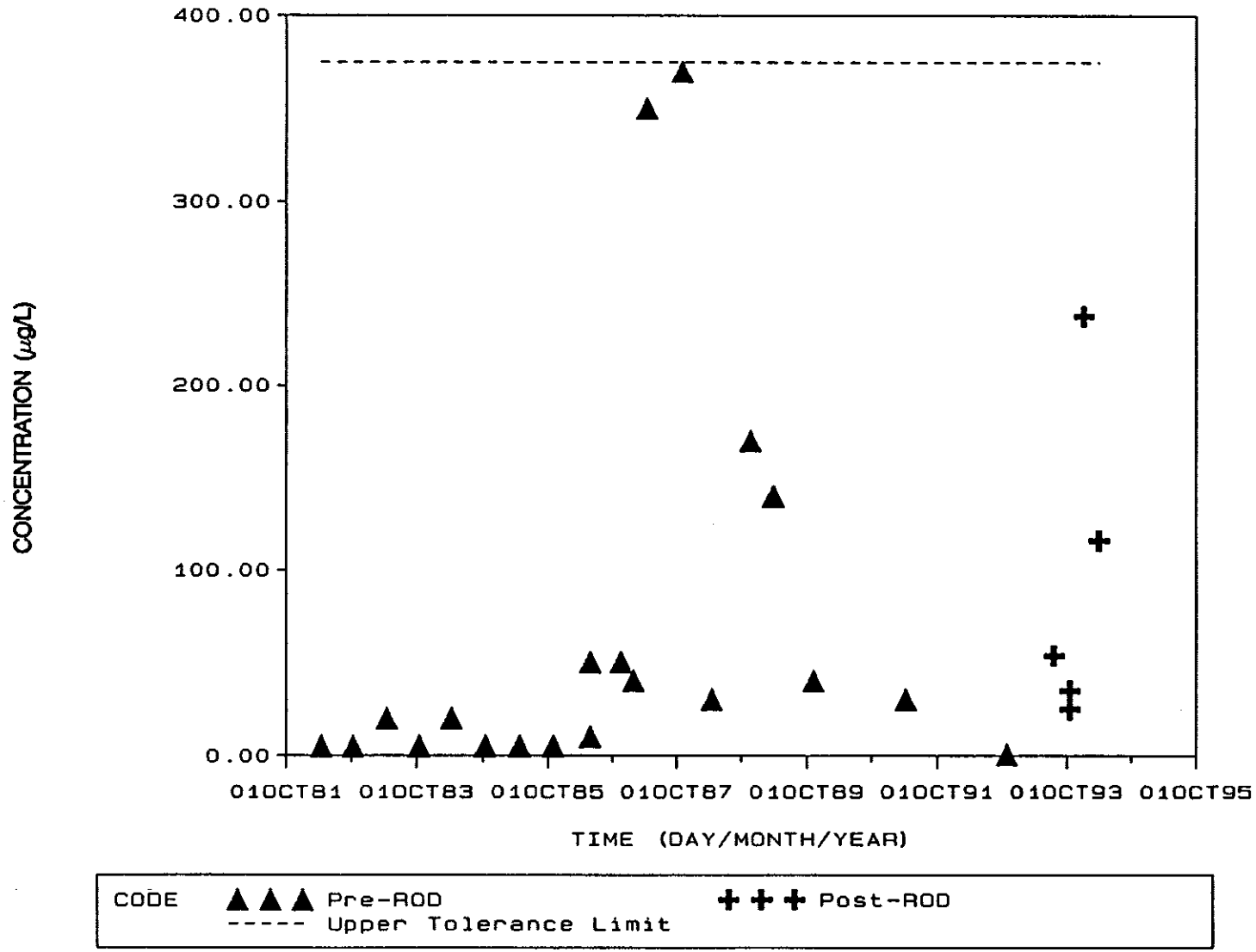
Well	Sample Date	Concentration	Units	Analysis Flag
PW-11	07/27/93	113.00	ug/L	
PW-11	10/20/93	92.90	ug/L	
PW-11	01/12/94	98.00	ug/L	
PW-11	04/05/94	88.70	ug/L	
PW-12	07/28/93	6.00	ug/L	U
PW-12	10/19/93	6.00	ug/L	U
PW-12	01/06/94	5.00	ug/L	U
PW-12	04/05/94	7.00	ug/L	U
TRA-4	01/06/94	6.00	ug/L	B
TRA-7	07/27/93	201.00	ug/L	
TRA-7	07/27/93	194.00	ug/L	
TRA-7	01/10/94	195.00	ug/L	
USGS-53	07/21/93	53.40	ug/L	
USGS-53	10/19/93	34.60	ug/L	
USGS-53	10/19/93	24.80	ug/L	
USGS-53	01/07/94	238.00	ug/L	
USGS-53	04/04/94	116.00	ug/L	
USGS-54	07/21/93	7.10	ug/L	B
USGS-54	10/19/93	6.00	ug/L	U
USGS-54	01/11/94	19.00	ug/L	
USGS-54	04/05/94	7.30	ug/L	B
USGS-54	04/05/94	7.00	ug/L	U
USGS-55	07/22/93	23.20	ug/L	
USGS-55	10/20/93	24.90	ug/L	
USGS-55	01/12/94	72.00	ug/L	
USGS-55	04/04/94	53.10	ug/L	
USGS-56	07/27/93	245.00	ug/L	
USGS-56	10/20/93	136.00	ug/L	
USGS-56	01/12/94	73.00	ug/L	
USGS-56	04/04/94	109.00	ug/L	
USGS-58	07/26/93	12.00	ug/L	
USGS-58	01/11/94	16.00	ug/L	
USGS-65	07/26/93	187.00	ug/L	
USGS-65	01/10/94	163.00	ug/L	
USGS-65	01/10/94	163.00	ug/L	

Post-ROD Data

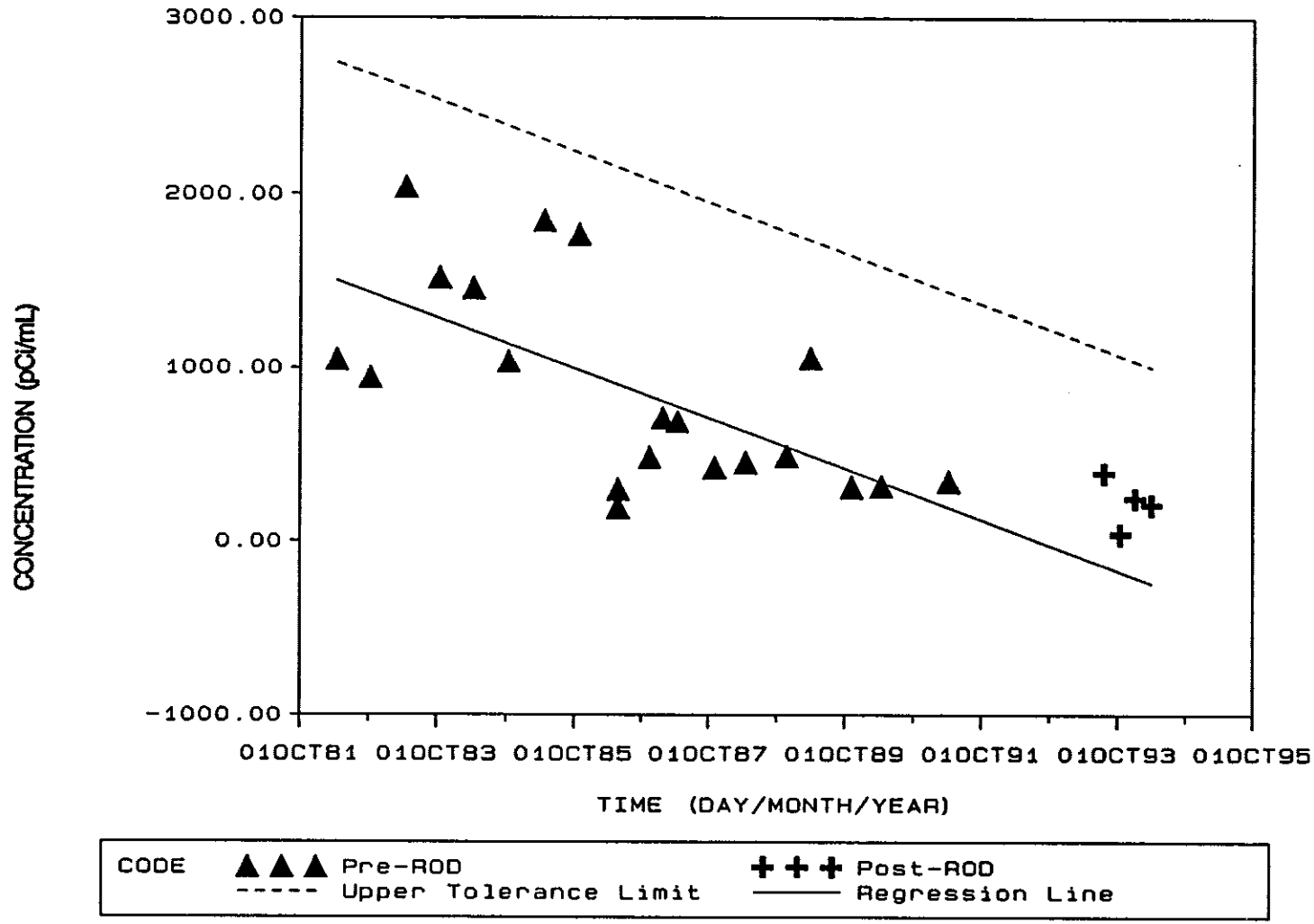
ANALYTE=Tritium

Well	Sample Date	Concentration	Units	Analysis Flag
PW-11	07/26/93	112.00	pCi/mL	
PW-11	10/20/93	130.00	pCi/mL	
PW-11	01/12/94	126.00	pCi/mL	
PW-11	04/05/94	130.00	pCi/mL	
PW-12	07/28/93	24.10	pCi/mL	
PW-12	10/19/93	27.40	pCi/mL	
PW-12	01/06/94	19.00	pCi/mL	
PW-12	04/05/94	17.00	pCi/mL	
TRA-7	07/27/93	30.80	pCi/mL	
TRA-7	07/27/93	30.30	pCi/mL	
TRA-7	01/07/94	31.00	pCi/mL	
USGS-53	07/21/93	390.00	pCi/mL	
USGS-53	10/19/93	43.40	pCi/mL	
USGS-53	10/19/93	42.00	pCi/mL	
USGS-53	01/07/94	246.00	pCi/mL	
USGS-53	04/04/94	210.00	pCi/mL	
USGS-54	07/21/93	6.60	pCi/mL	
USGS-54	10/19/93	5.10	pCi/mL	
USGS-54	01/11/94	8.10	pCi/mL	
USGS-54	04/05/94	3.20	pCi/mL	
USGS-54	04/05/94	2.90	pCi/mL	
USGS-55	07/22/93	11.00	pCi/mL	
USGS-55	10/20/93	4.00	pCi/mL	
USGS-55	01/12/94	2.60	pCi/mL	
USGS-55	04/04/94	1.80	pCi/mL	
USGS-56	07/27/93	237.00	pCi/mL	
USGS-56	10/20/93	746.00	pCi/mL	
USGS-56	01/12/94	87.20	pCi/mL	
USGS-56	04/04/94	500.00	pCi/mL	
USGS-58	07/26/93	4.20	pCi/mL	
USGS-58	01/11/94	4.60	pCi/mL	
USGS-65	07/26/93	28.20	pCi/mL	
USGS-65	01/10/94	27.40	pCi/mL	
USGS-65	01/10/94	26.60	pCi/mL	

Well USGS-53 Total Chromium

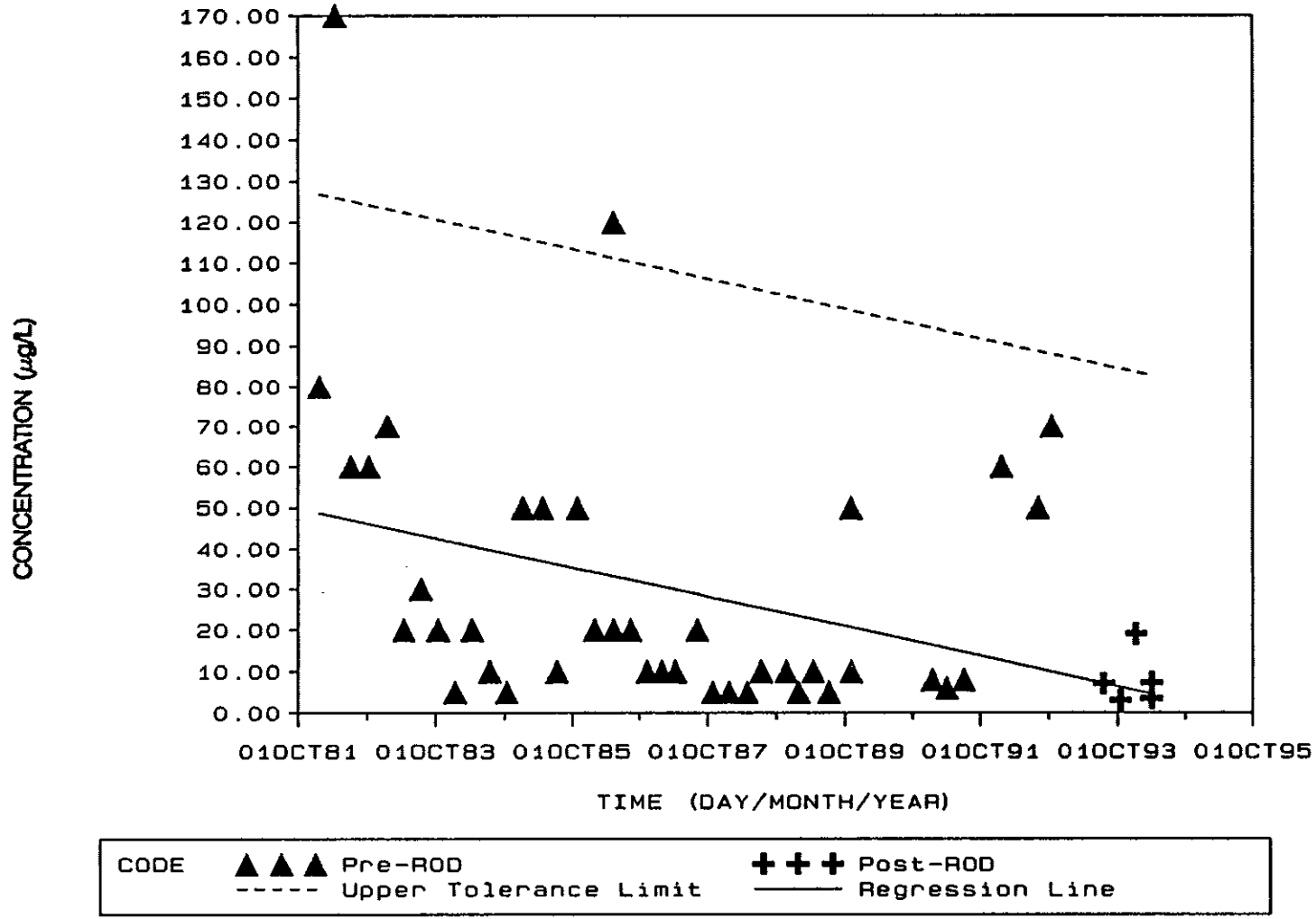


Well USGS-53 Tritium



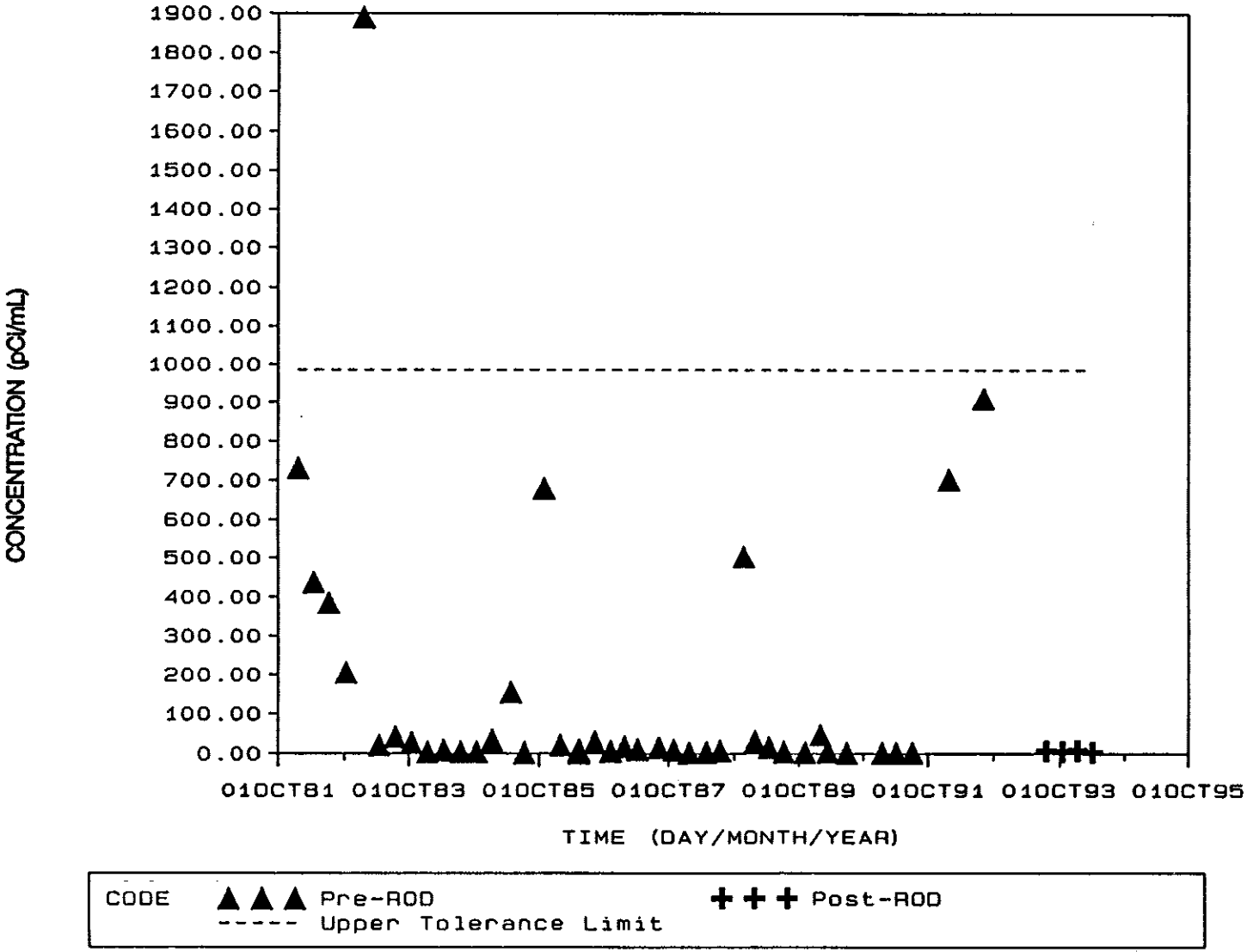
y = -0.3987x + 4746.17
R Squared = 0.42

Well USGS-54 Total Chromium

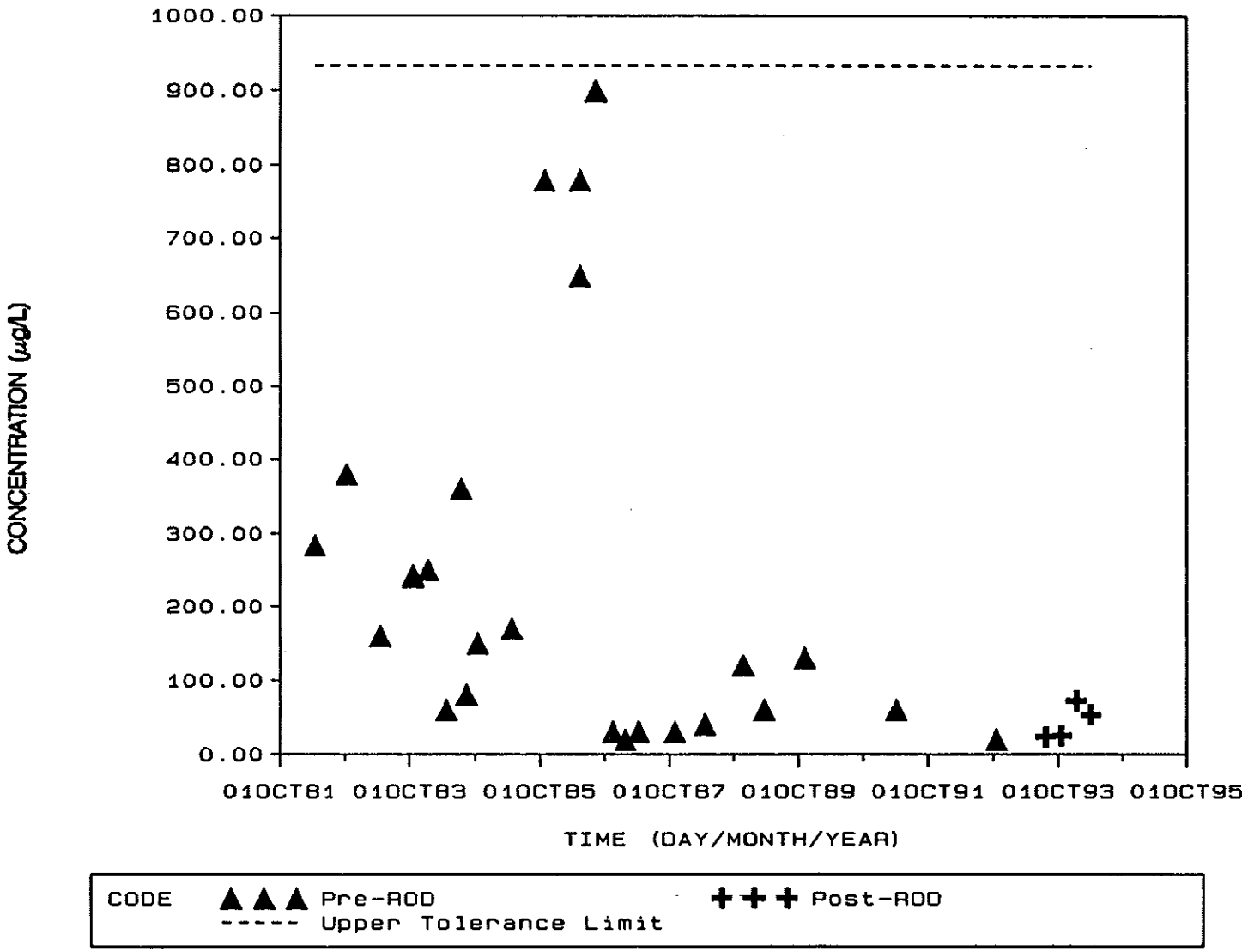


y = -0.0099x + 128.28
R Squared = 0.1

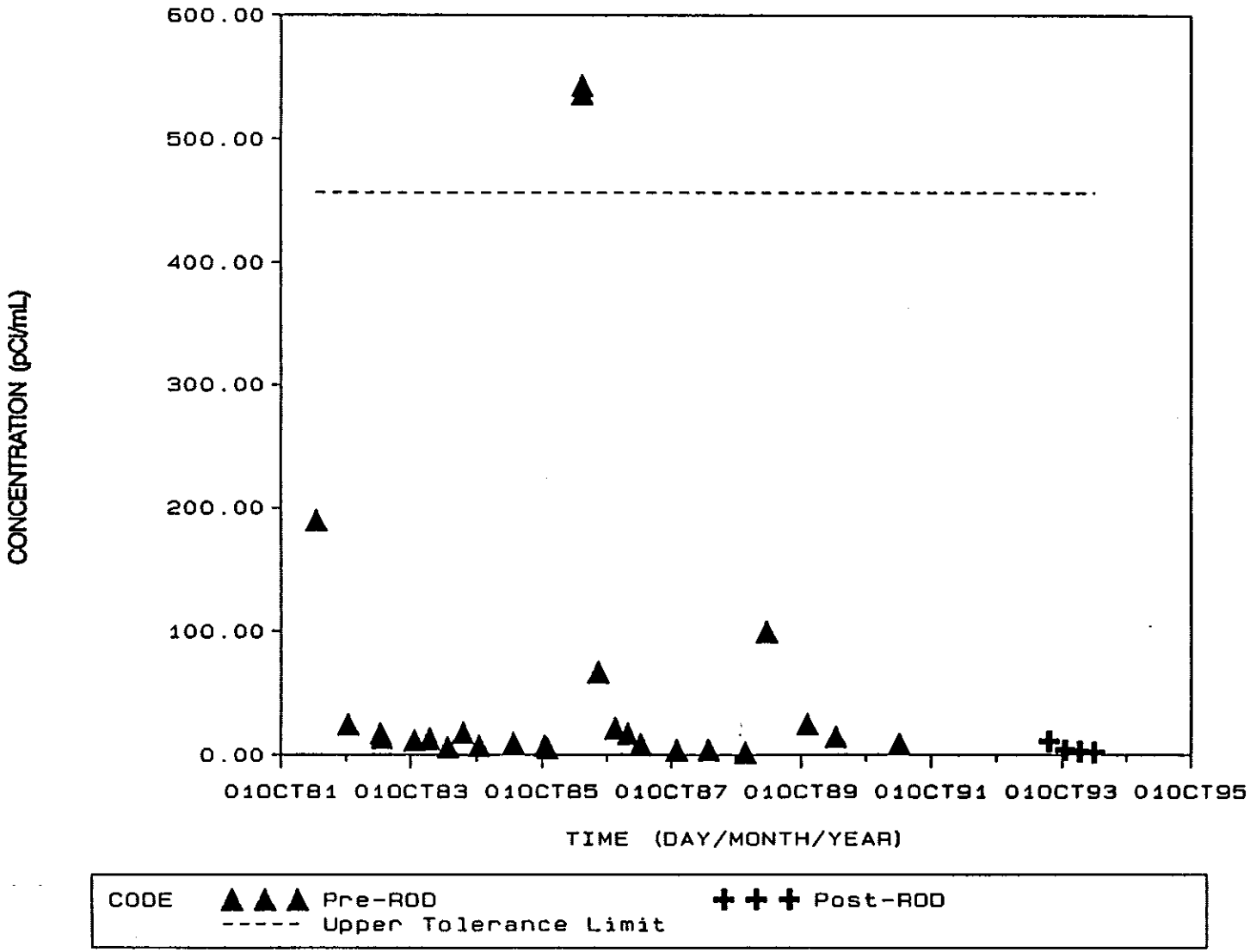
Well USGS-54 Tritium



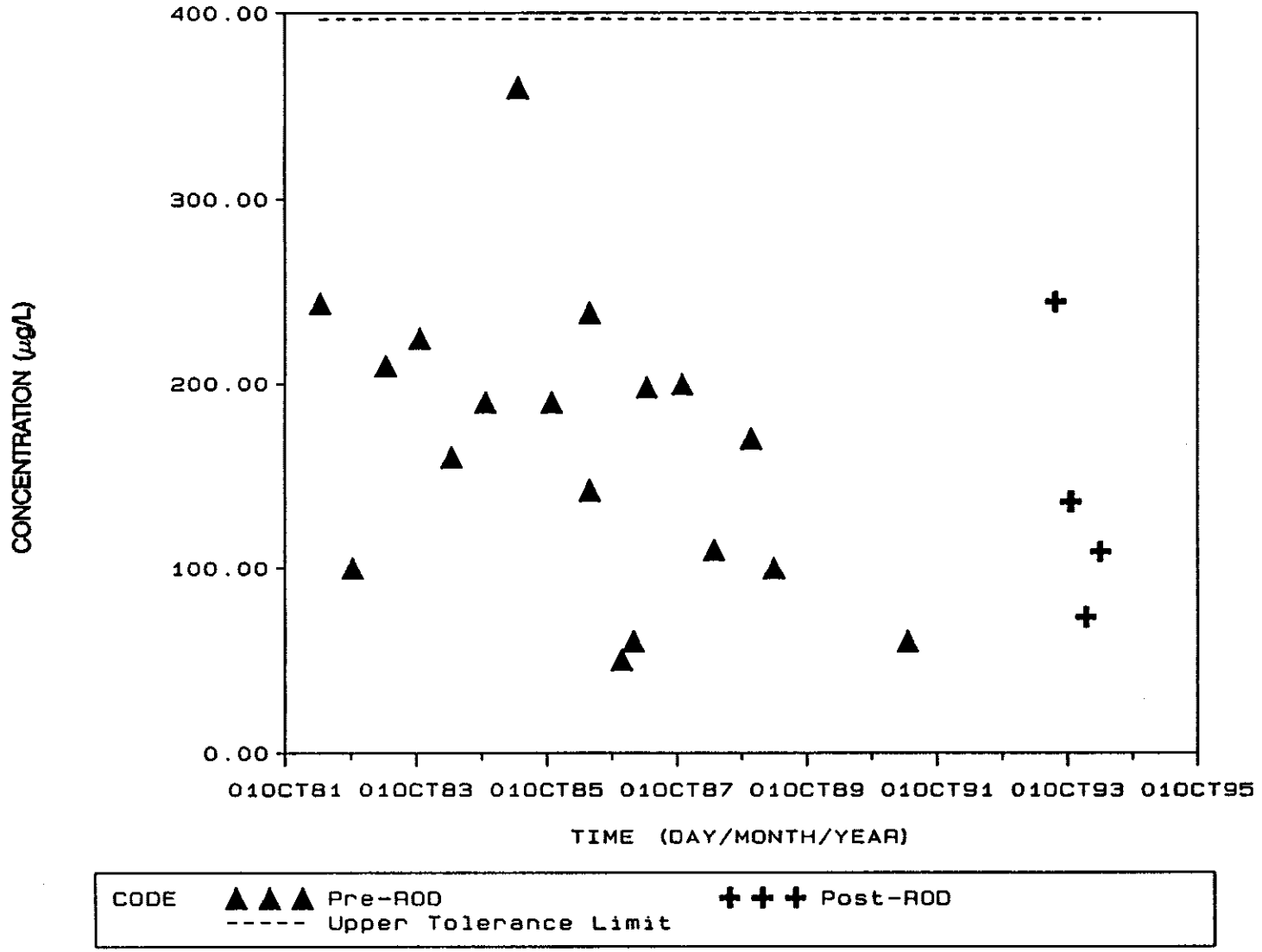
Well USGS-55 Total Chromium



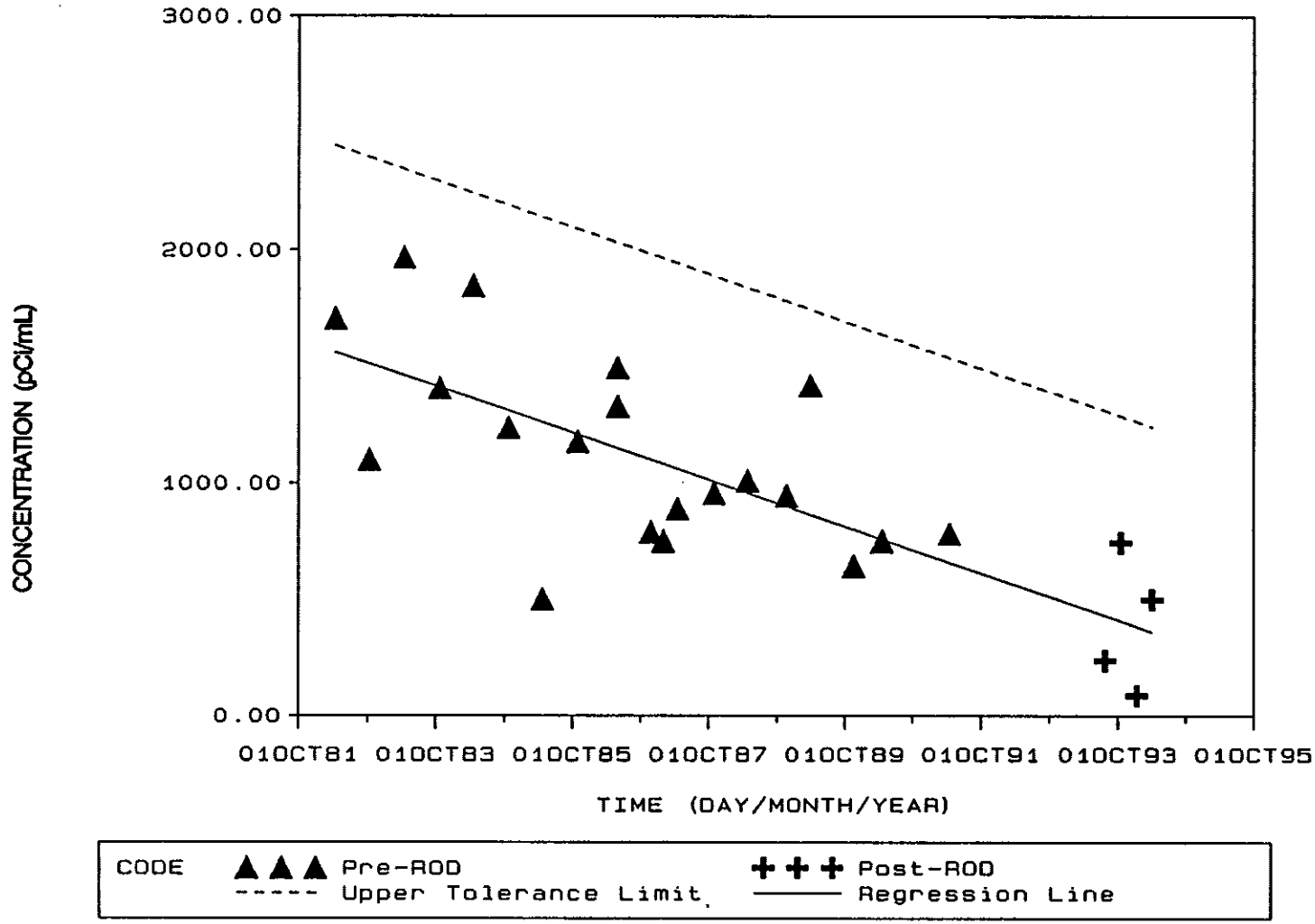
Well USGS-55 Tritium



Well USGS-56 Total Chromium

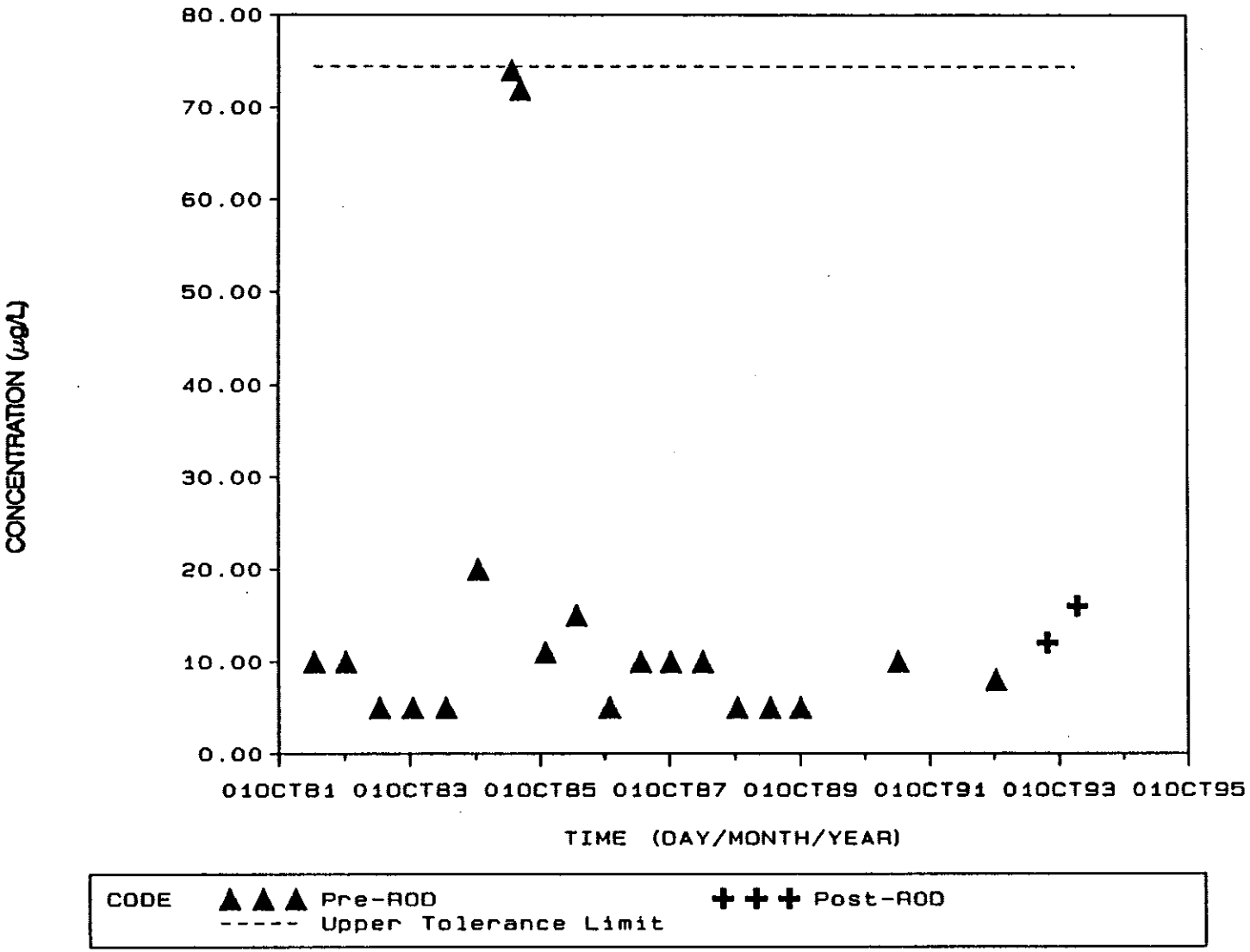


Well USGS-56 Tritium

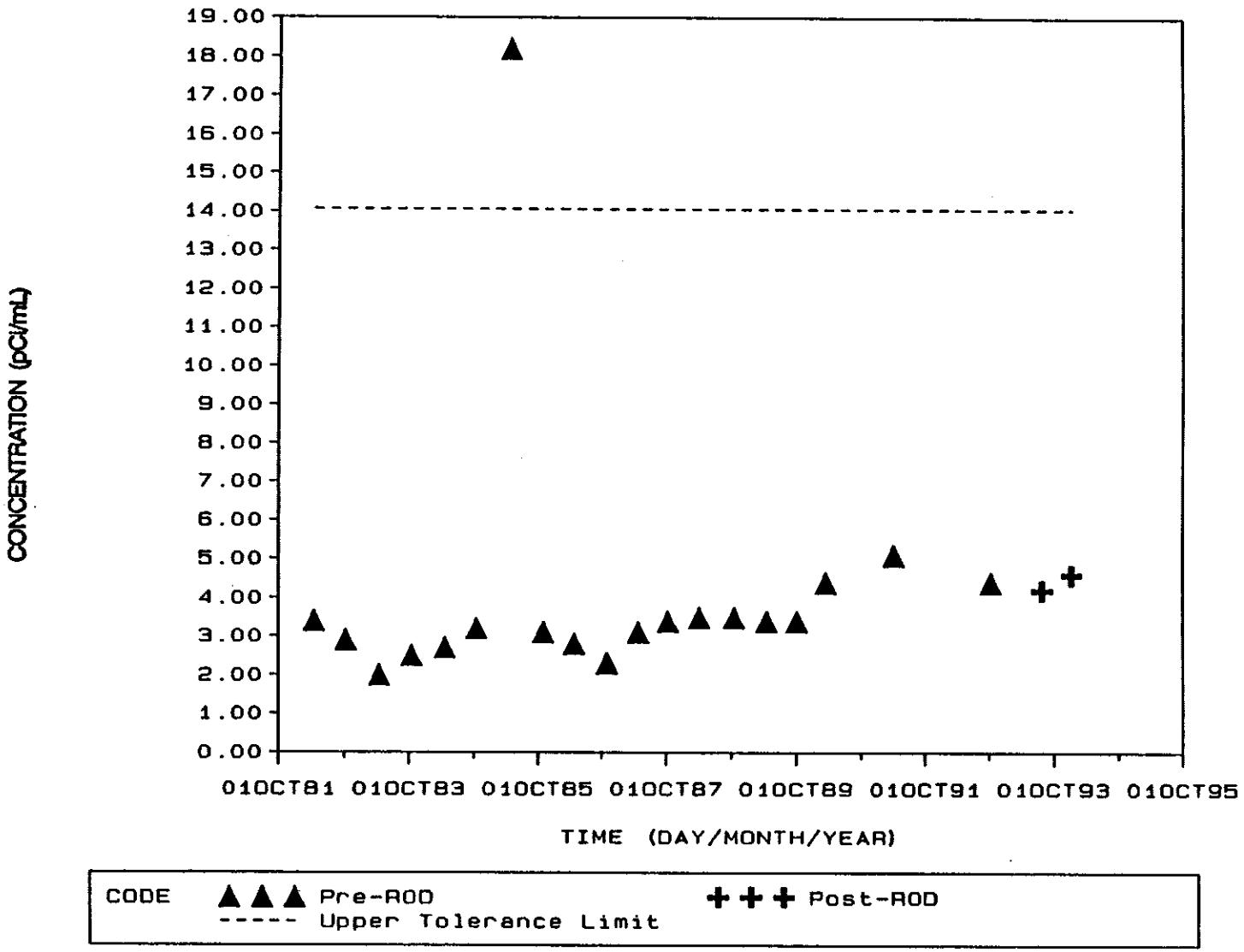


y = -0.2761x + 3812.7
R Squared = 0.41

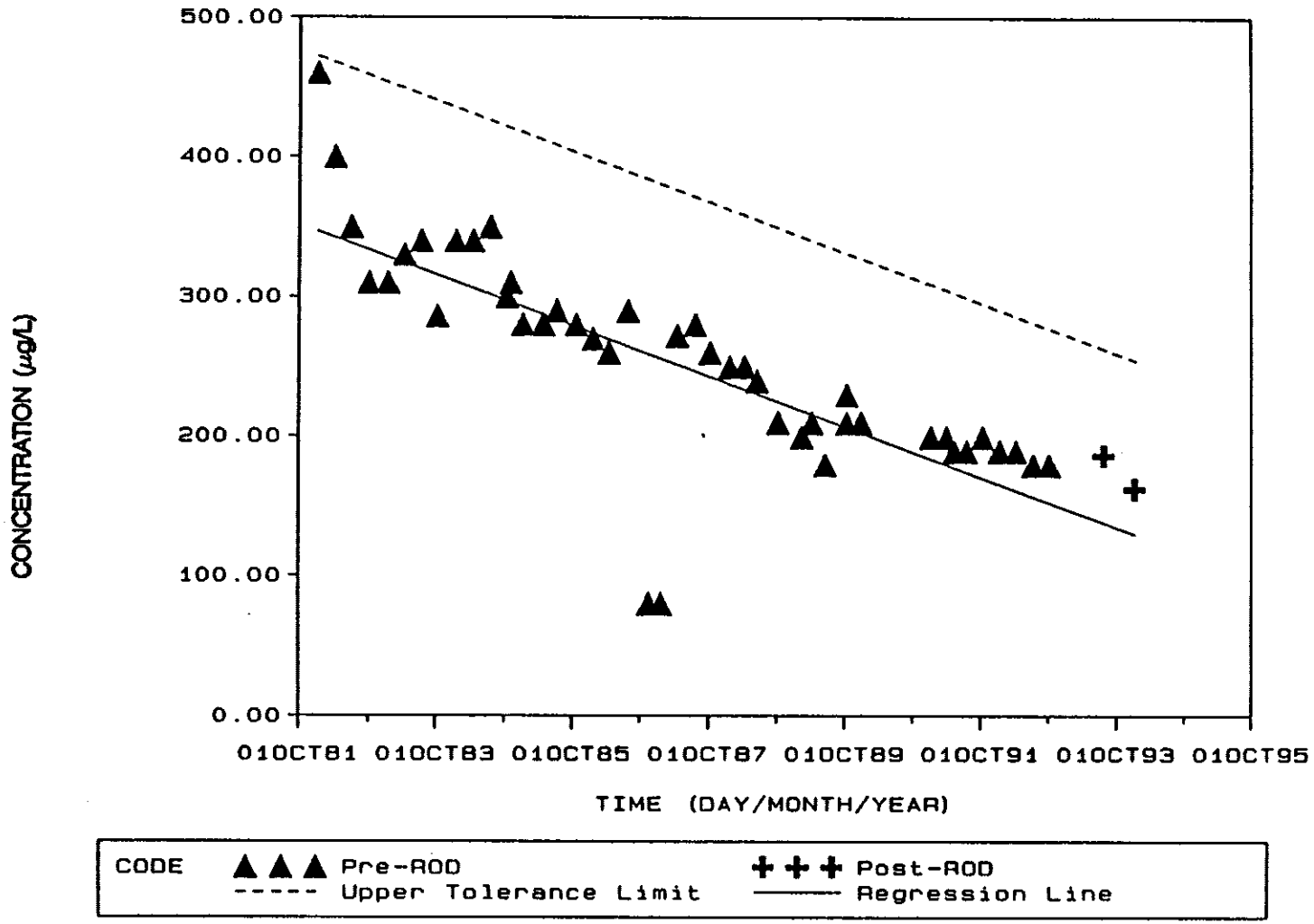
Well USGS–58 Total Chromium



Well USGS-58 Tritium

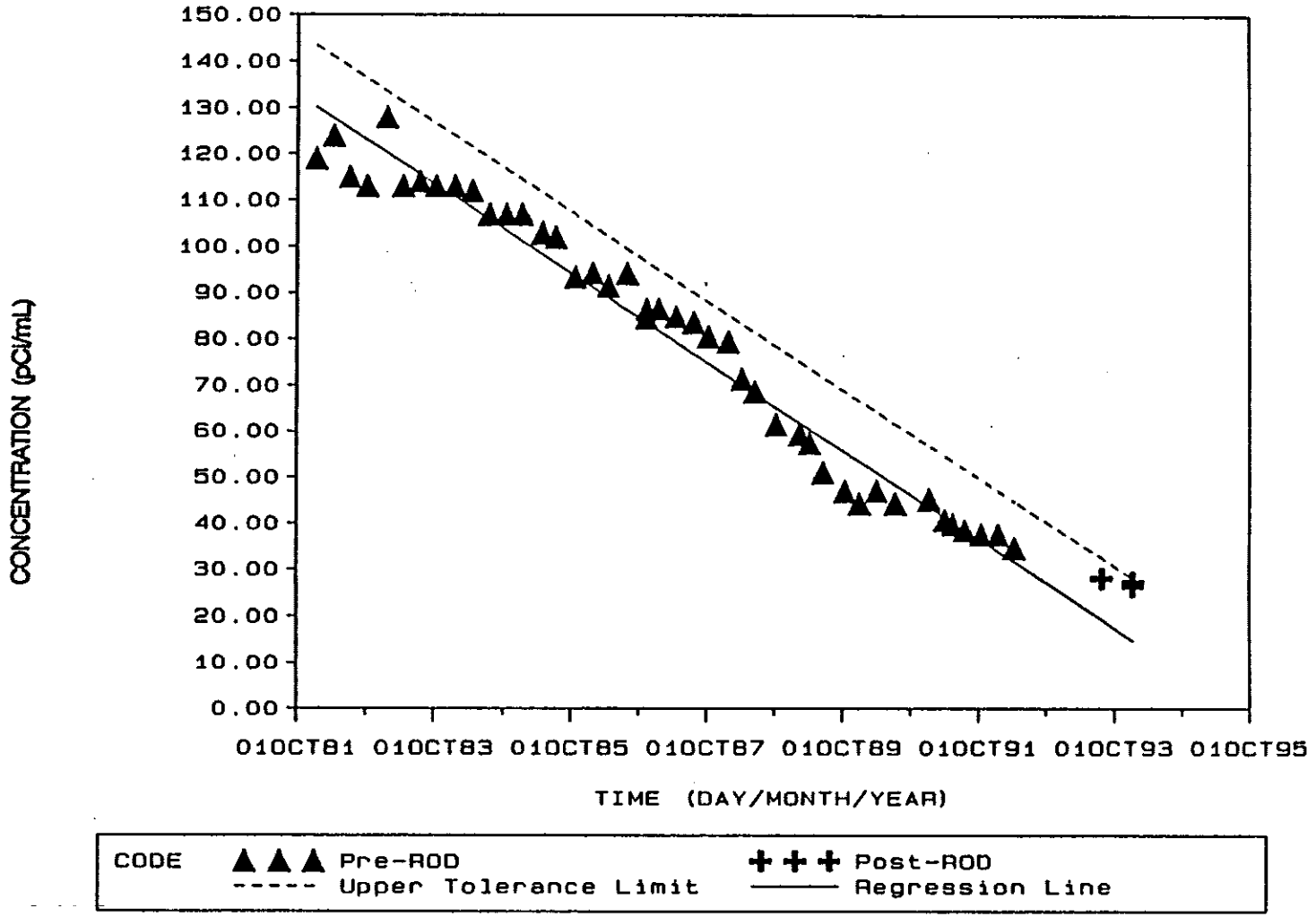


Well USGS-65 Total Chromium



y = -0.0495x + 744.87
R Squared = 0.53

Well USGS-65 Tritium



y = -0.0263x + 341.42
R Squared = 0.95